PROFESSIONAL CASSETTE RECORDER

MODEL C-204

SERVICE DATA

DEC./1978

SUPERSCOPE®
BY **marantz®**

SUPERSCOPE INC.
20525 NORDHOFF STREET CHATSWORTH, CALIFORNIA 91311·U S.A

SUPERSCOPE DESIGN AND SERVICE

Using superior design and selected high grade components, SUPERSCOPE has created the ultimate in stereo sound. Only original SUPERSCOPE parts can insure that your SUPERSCOPE product will continue to perform to the specifications for which it is famous.

Parts for your SUPERCOPE stereo are generally available within 72 hours throughout the nation via a toll-free line to our National Parts Depot in California. The sales professionals who take your call immediately refer to their own desk top computer terminal and can quickly determine the availability and price information you require. If for some reason, your order should exceed our available stock, we usually can instantly provide an alternate replacement part or current delivery information. When the order is placed and confirmed, the computer simultaneously generates "hard copy" orders at the distribution center. As hard copies come directly from the computer to the national parts depot, your requested stock is assembled and prepared for shipment and placed on the first available carrier for delivery to you.

ORDERING PARTS

Phone orders will eliminate mail delays, and we encourage the use of this method. If you order by mail, use SUPERSCOPE parts order forms which are available from our National Parts Depot located at the following address:

SUPERSCOPE NATIONAL PARTS DEPARTMENT
20525 Nordhoff Street
Chatsworth, California 91311
Phone: 1-800-423-5108
1-213-998-9333

The following information must be supplied to eliminate delays in processing your order:

1. Complete address.
2. Complete part numbers.
3. Complete description of parts.
4. Model number for which part is required (indicate SUPERSCOPE).
5. Account number (for account customers only).

Direct consumers will be provided with the current retail prive quotation on available parts in order to advise them of the cost of the parts and shipping.

OVERSEAS PARTS ORDERING

Parts may also be ordered from the following overseas addresses:

CANADA

Superscope Canada, Ltd.
3710 Nashua Drive
Mississauga
Ontario, Canada L4V1M5

AUSTRALIA

Superscope (Australasia) Pty., Ltd.
32 Cross Street (P.O. Box 604)
Brookvale 2100 N.S.W.
Australia

JAPAN

Marantz Japan, Inc.
3622 Kamitsuruma
Sagamihara Shi
Kanagawa, Japan

EUROPE

Superscope Europe, S.A.
Avenue Leopold III, 2
7120 Peronnes-Lez-Binche
Belgium

Marantz France
Rue Louis Armand 9
92600 Asnieres
Hauts-de-Seine
France

Marantz Audio U.K. Ltd.
London Road, 203
Staines
Middlesex
England

Superscope GmbH
Max-Planck-Strasse 22
D-6072 Dreieich 1
West Germany

All of the above locations are fully equipped to take care of your total service needs. Because various countries have differing configuration requirements, it is necessary that you contact the service facility in your particular country. In the event that there is no service location listed for your country, please contact the nearest facility for the necessary assistance.

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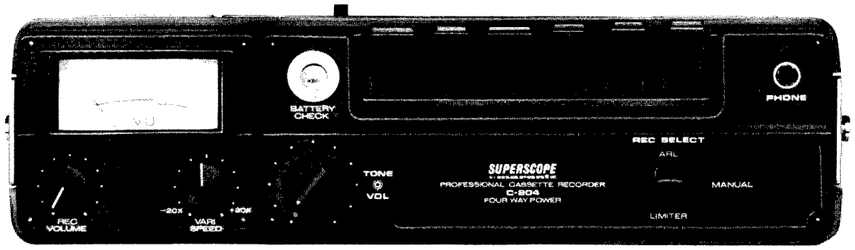

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SPECIFICATIONS

GENERAL

Dimensions (W x H x D) . . . . . 29.3 x 8.2 x 19.5 cm
(11⅝ x 3¼ x 7¾ inches)
Weight . . . . . 3.2 kg(7.0 lbs) with batteries
2.8 kg(6.2 lbs) without batteries
Power Requirements
DC: . . . . . Four UM-1, "D" size flashlight batteries
(Rechargeable pack: Model RBC-1)
AC: For Europe . . . . . 240/220/120/110 V
50 Hz, 7 W
For USA & Canada . . . . . 120 V, 60 Hz, 7 W
Number of Semiconductors
Transistor 1
FET 1
Diode 8
IC 3
Terminals
Input: Microphone 1
Plug Type . . . . . Mini
Input Sensitivity . . . . . 0.35 mV
Impedance . . . . . 10 kΩ
Aux 1
Plug Type . . . . . Mini
Input Sensitivity . . . . . 80 mV
Impedance . . . . . 150 kΩ
Output: Line 1
Plug Type . . . . . Mini
Output Level . . . . . 700 mV ±3 dB
Impedance . . . . . 4 kΩ
DIN(Rec./Play) 1
Plug Type . . . . . DIN
Input Sensitivity . . . . . 40 mV
Input Impedance . . . . . 47 kΩ
Output Level . . . . . 700 mV ±3 dB
Output Impedance . . . . . 4 kΩ
EXT. Speaker 1
Plug Type . . . . . Mini
Power Output . . . . . 1.2 W
10% THD, DC
Headphone 1
Plug Type . . . . . Phone
Impedance . . . . . 120 Ω
AC Inlet 1
DC Jack 1

TAPE RECORDING SECTION

Tape . . . . . PHILIPS type Compact Cassette Tape
Recording System . . . . . Half track, AC Bias
Erasing System . . . . . Half track, AC Erase
Rewind & Fast Forward Time 110 sec/C-60
Number & Type of Motor . . . . . One DC electrical

1. FEATURES

1-1 Tape Speed Control

In the playback mode of operation the tape speed can be continuously varied about ±20% in a linear relation to turning of the rotary variable resistor. The control is normally set at the center click position at which the tape runs at the rated speed. The tape speed is controlled with changing of the moter rpm. In the record mode of operation the tape is automatically set to keep the rated speed.

1-2 Full Auto-Stopper

When the tape comes to the end in any of the playback, record, fast forward and rewind modes of operation, the tape tension-controlled auto-stopper actuates to automatically release the locked pushbutton. It takes 2 to 6 seconds to release the pushbutton after the tape is wound up; note that the interval becomes longer with decrease of the power line voltage. Locked PAUSE pushbutton prevents operation of the auto-stopper.

1-3 Cue and Review Pushbuttons

By depressing the CUE or REVIEW pushbutton, the tape can be fast forward or rewound while monitoring recorded sound. This feature is very convenient for easy reference and indexing or repeated playback. By depressing the CUE or REVIEW pushbutton with the PLAY pushbutton leaving depressed, the pinch roller is separated from the capstan, allowing the tape to be run at a high speed.

1-4 4-Way Power Supply

The Model C-204 can be operated with four types of power supply "D"-size batteries (4 pieces), rechargeable battery, AC power line and external 6V DC power supply. To avoid connection of two or more power supplies at a time, the contacts of the AC jack (J001) and external DC jack (J002) select a single power supply. The Power supply selection is in the priority order: 1 "D"-size batteries (or rechargeable battery), 2 External 6V DC power supply, and 3 AC power line. The rechargeable battery can be charged through the AC power line (or external 6V DC power supply) even while the Model C-204 is not in operation.

1-5 Dual Flywheel Mechanism

Applying two flywheels turning round oppositely to each other, the strength caused by wobble or others is canceled each other, and stable performance of flywheel rotation is always assured.

1-6 One-Touch Recording

The tape recorder can be set to the recording mode just by pressing the REC button. There is no need to press the PLAY button.

2. SERVICE NOTE

As can be seen from the circuit diagram, the chassis of Model C-204 consists of following units. Each unit mounted on a printed circuit board is described within the square enclosed by a bold dotted line on the circuit diagram.

Pre-Amp . . . . . mounted on P.W. Board, P100
Power Supply . . . . . mounted on P.W. Board, P100
Switch . . . . . mounted on P.W. Board, P100
Terminals . . . . . mounted on P.W. Board, P200
Headphone . . mounted on P.W. Board, P300
AC Voltage Selector (N Only) . . mounted on P.W. Board, P400
Fuse (U.C Only) . . . . . mounted on P.W. Board, P500

3. TEST EQUIPMENT REQUIRED FOR SERVICING REPLACEMENT

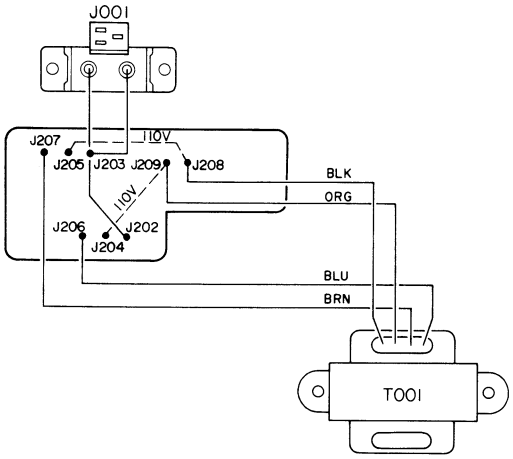
For measuring or checking the Model C-204, the following instruments and materials are necessary.

- Audio Oscillator (af OSC.)
- Attenuator (600 Ω)
- VTVM
- Distortion Meter
- Oscilloscope
- Bandpass Filter
- Wow and Flutter Meter
- Torque Meter (Cassette Type)
- Digital Frequency Counter
- Blank Tapes (Completely erased with bulk eraser)
  TDK AC-211 (Normal)
  NOTE: If any doubt is noted in a measured value, use new tape.
- Test Tapes (New tape)

MTT-111	Wow and Flutter. Tape Speed
MTT-112	Measurement of Output Level Signal to Noise Ratio
MTT-150	Adjustment of Output Level
MTT-116U	Measurement of Frequency Response (For Normal)
MTT-121	Crosstalk
MTT-141	Channel Separation

CHANGE OF POWER TRANSFORMER PRIMARY VOLTAGE (for Europe Model Only)

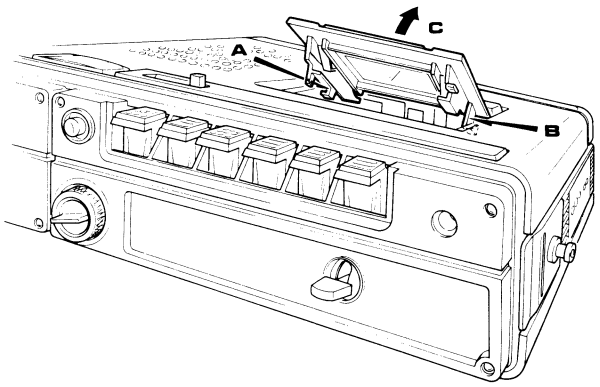
The C-204 is wired for 220V line voltage. It can be operated with 110V AC by changing the power transformer lead wire as illustrated.



4. BOTTOM CASE COVER AND CHASSIS DISASSEMBLING PROCEDURES

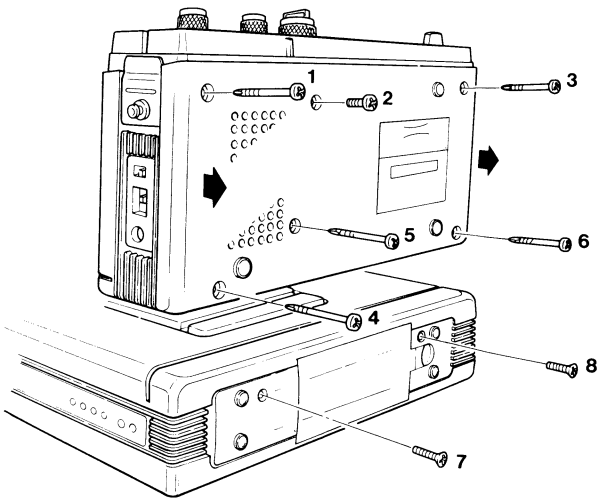
4-1 Removal of Cassette Holder

To remove the cassette holder, pull it by pushing A and B in the direction of the arrow shown in the figure.



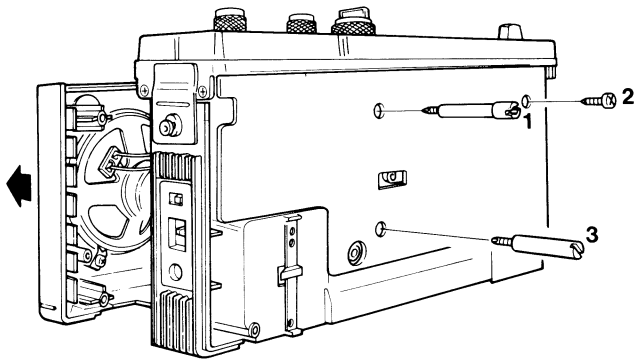
4-2 Removal of Back Cover

Remove six screws 1 to 6 at the back side and two screws 7 & 8 at the bottom. Then the back cover will be removed.



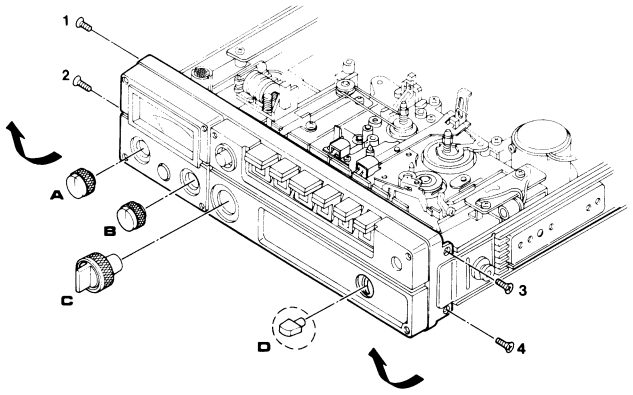
4-3 Removal of Upper Case

Remove three screws 1 to 3 . Then the case will be removed in the direction of the arrow shown in the figure. At that time, be careful to disconnect the wires to the speaker.



4-4 Removal of Front Case

Firstly remove three knobs A , B and C and knob D . Secondly remove four screws 1 to 4 of each side. Then the front case will be removed in the direction of the arrow shown in the figure.
At that time, all functional buttons should be previously pushed down so as not to be caught by the front case when removing.

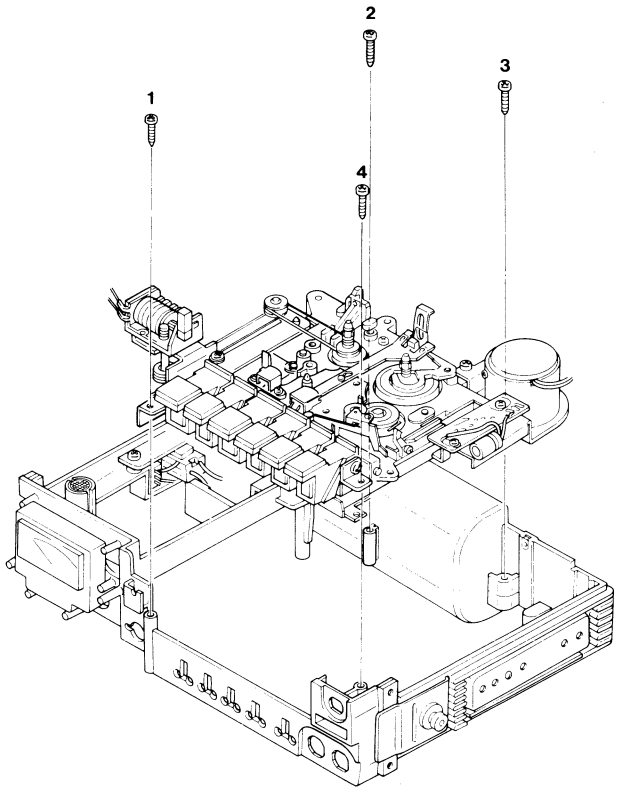


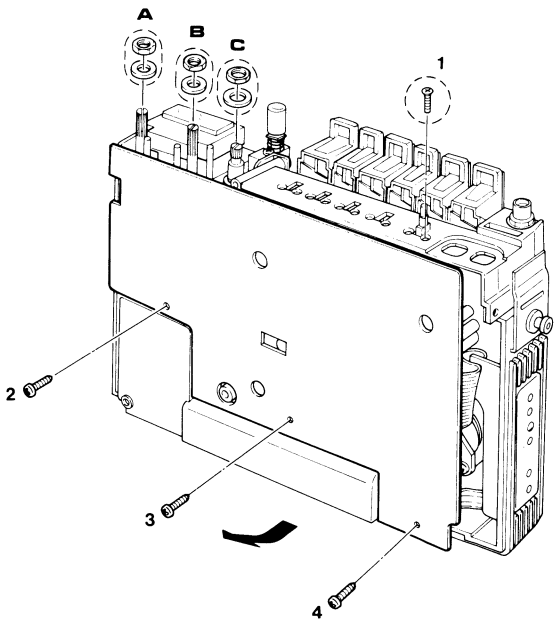
4-5 Removal of Main Board

Remove the screw 1 and three nuts A to C in the front side. Next remove three screws 2 to 4 and take off the main board in the direction of the arrow shown in the figure.

4-6 Removal of Mechanism

Remove four screws 1 to 4 in the figure. Then the mechanism will be removed.





5. ADJUSTMENT AND MEASUREMENT (AUDIO) INSTRUCTIONS

Precautions: Prior to any adjustment or measurement, clean the head slits with gauze containing alcohol or carbon tetrachloride, and fully demagnetize the heads, capstan and similar parts.

5-A MECHANICAL ADJUSTMENTS

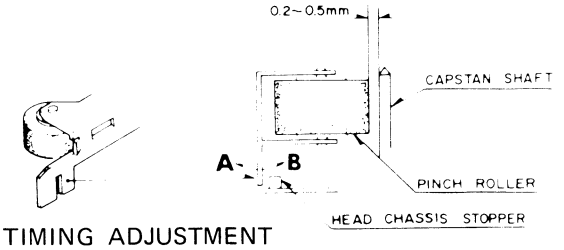
5A-1 Play Operation Check

(1) TIMING CHECK

- Depress button PLAY, and check to make sure that the take-up reel rotates first and then that the pinch roller rotates. Simultaneous rotation of these reel and roller is not acceptable.

  NOTE: For this check, slowly depress the button without tape mounted regardless of locking condition.

- Slowly depress button PLAY, and the take-up reel will start rotation. At that time, check to make sure that a clearance between the pinch roller and capstan is less than 0.5 mm.



(2) TIMING ADJUSTMENT

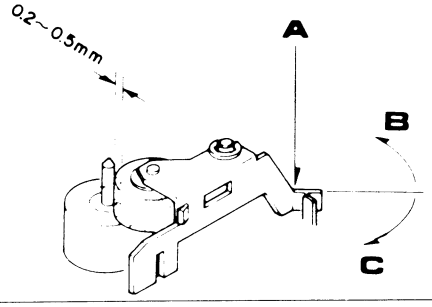
If out of specification, bend the part of the pinch roller bracket which faces the head chassis stopper. In the figure shown above, bend the part in the direction of **A** to decrease the clearance. To increase the clearance, bend the part in the direction of **B**.

NOTE: After adjustment, check to be sure that the pinch roller bracket does not contact the head chassis stopper in PLAY mode.

5A-2 Pause Timing

Depress button PLAY, slowly depress button PUASE, and the take-up reel will pause. At that time, check to ensure that a clearance between the pinch roller and capstan ranges from 0.2 to 0.5 mm. If out of the range, adjust a bending angle of the pinch roller bracket arm (view **A**).

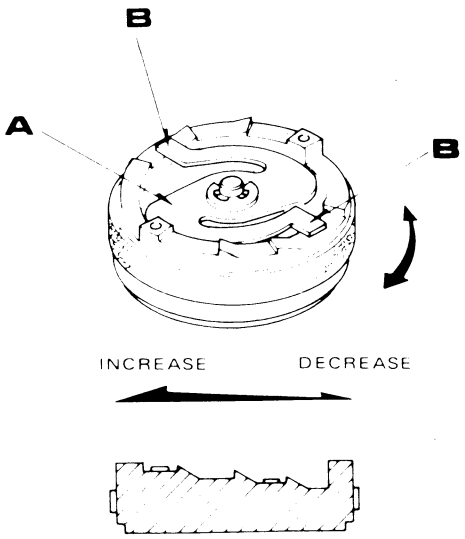
NOTE: To increase a clearance between the pinch roller and capstan, decrease the angle (in the direction of **C** in the figure). To decrease the clearance, increase the angle (in the direction of **B**).



5A-3 Torque Adjustment (FF, REW)

Set the extended parts (**B** in the figure shown above) of the torque adjustment leaf spring (**A** in the figure) of the FF/REW idler on any one of three stepping parts of the idler.

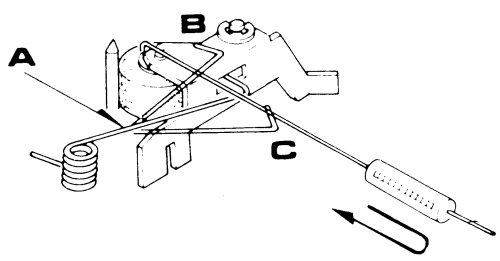
NOTE: Increase torque, set the extended parts to the stepping part of "INCREASE" and to decrease it, set those to the stepping part of "DECREASE"



5A-4 Pinch Roller Pressing Force

As shown above, measure pressing force of the pinch roller using a gauge. For measurement, proceed as follows. Pull the pinch roller off the capstan shaft as shown with the arrow, and gradually release it to the capstan. Just when the pinch roller starts rotating, read an indication of a gauge. Pressing force must range in 300 g ±50 g. If out of the range, bend the pinch roller spring in the direction of **B** or **C** at section **A** shown above.

NOTE: To increase pressing force, bend the said spring in the direction of **B**, and to decrease the force, bend it in the direction of **C**.



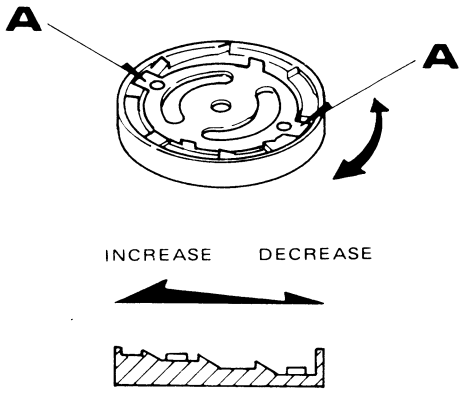
5A-5 Torque Adjustment (PLAY)

Mount the extended parts **A** (two) of the disc leaf spring on any one of the stepping parts of the idler. Adjusting range: 40 to 70 g.cm.

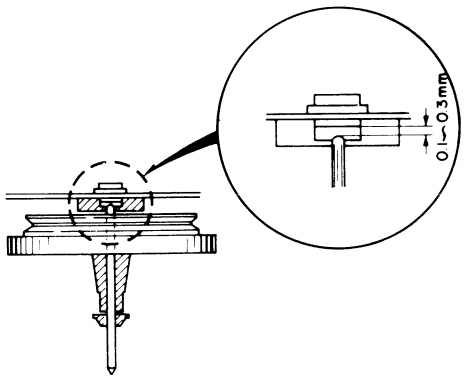
NOTES:

(1) To increase torque, mount the extended parts on "INCREASE" and to decrease torque, mount them on "DECREASE".

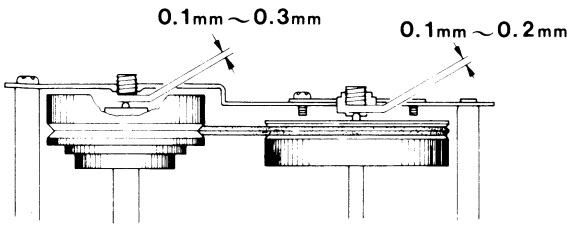
(2) Check the take-up clutch for slipping. When the reel base is paused, the wheel must smoothly rotate. The wheel, when irregularly rotating or stopping, is not acceptable.



5A-6 Flywheel Thrust Adjustment

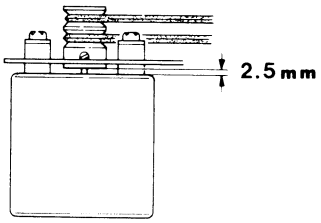


Adjust a clearance between the capstan tail end and thrust bearing to a range from 0.1 to 0.3 mm as shown. Adjust the thrust screw in the flywheel bracket using a Philips screwdriver. Since the clearance cannot be directly measured, capture a distance in an axial step of the flywheel with the sensibility. After adjustment has completed, secure the thrust screw with the screw lock.



5A-7 Installation of Motor Pulley

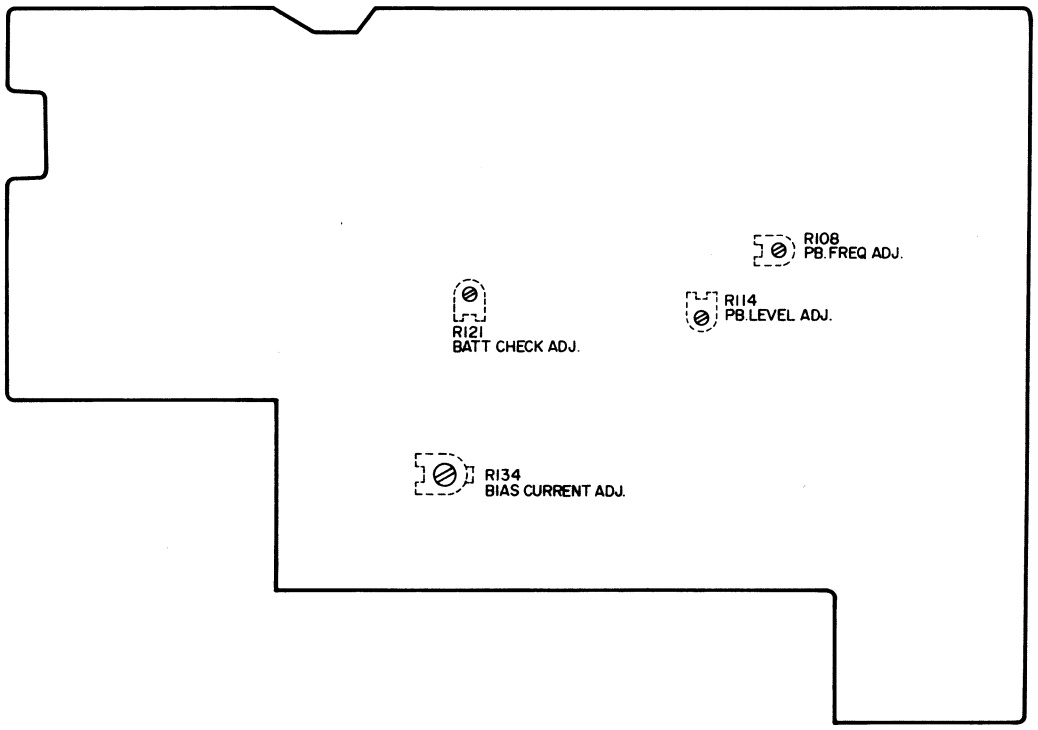
Check to ensure that a clearance between the DC motor and pulley is 3.1 mm. If out of specification, reposition the pulley as shown.



5A-8 Tape Speed Adjustment

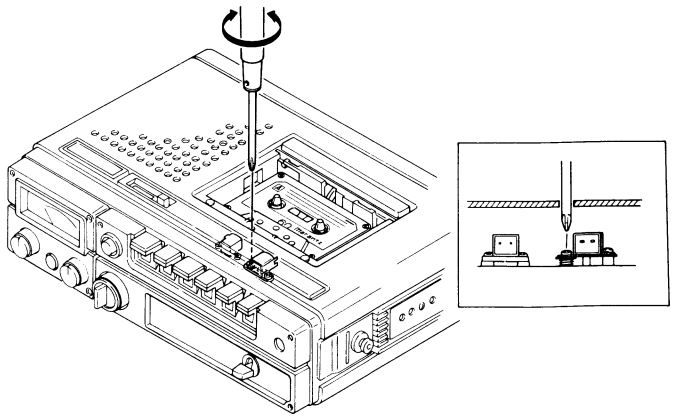
Mount 3 kHz test tape on the set, and check to make sure that the meter pointer of a measuring instrument (frequency counter) indicates 3000 Hz ±3% or less as specified. If tape speed exceeds the high limit, replace the pulley with a pulley of parts No. 4367262050. If the speed is lower than the low limit, replace it with a pulley of parts No. 4367262040.

5-B ELECTRICAL ADJUSTMENTS



5B-1 Azimuth Adjustment

Play back the 10 kHz or 6.3 kHz standard alignment tape. Adjust the azimuth adjusting screw 836N. After adjustment, repeatedly start and stop the tape several times to ensure no azimuth deviation.



5B-2 Meter Adjustment

SET UP

1. Power voltage: DC 4.5 V
2. Function switch position: Batt. Chck Switch: ON

PROCEDURES

1. Set up the unit for the playback mode of operation.
2. Apply an external 4.5 V source to the DC 6 V jack. Adjust 0 VU so that the meter reading is between the BLACK and GREEN area of scale.

   Adjust semi-fixed resistor R121.

5B-3 Head Azimuth Adjustment

SET UP

1. Power voltage:
   50 Hz/60 Hz voltage rated for the unit to be used in a market country.
   DC 6 V
2. Output terminal: LINE OUT
3. Load: 100 k ohm
   Measuring instrument input impedance.
4. Test tape used: MTT-116U

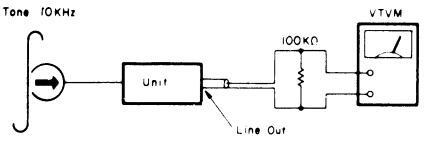
PROCEDURES

1. Play the 10 kHz portion of the test tape MTT-116U back. Adjust the head azimuth adjusting screw for maximum VTVM read.
2. After adjustment, lock the screw with bond.

CAUTION

After adjustment, repeat the playback and stop setting a few times to make certain of no head azimuth deviation.

Mode: playback



5B-4 Tape Speed Adjustment (Electrical Servo Controled Motor only)

SET UP

1. Power voltage:
   50 Hz/60 Hz AC voltage rated for the unit to be used in a market country.
   DC 6 V
2. Tone control position: MAX
3. Output terminal: SPK OUT
4. Test tape used: MTT-111 (3 kHz tone)
5. Unit position: Horizontal
   Vertical
6. VARI SPEED volume: Center

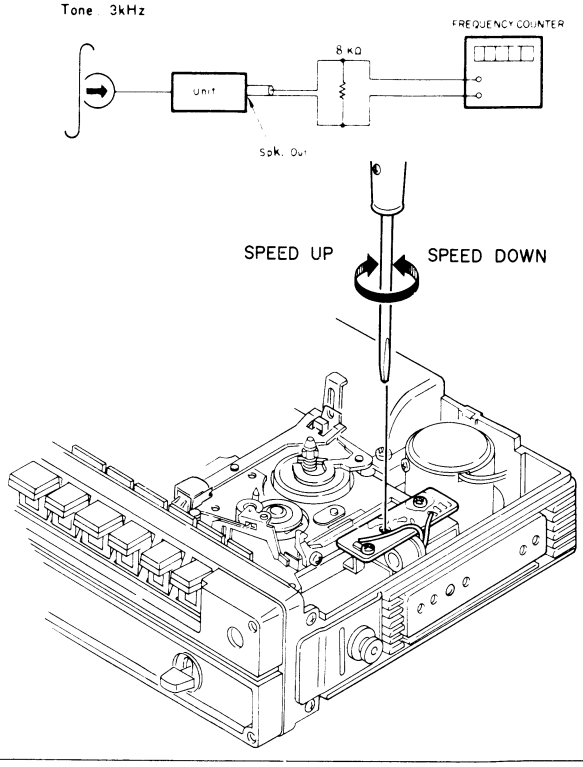
PROCEDURES

Play the mid position of the test tape MTT-111 back. Adjust the tape speed adjusting semi-fixed resistor in motor governor P.W. board to 3000 counter indication.

CAUTIONS

1. For adjustment the unit should be set up in the normal operating condition.
2. Do not proceed the semi-fixed resistor more turns than needed.
3. Do not proceed with adjustment after the unit.
4. If a strong shock or similar vibration is applied to the unit after adjustment, make certain that the measured tape speed had not changed.
5. If the speed deviation occurs, perform the adjustment again.
6. Be careful that the counter may indicate a wrong value because of too low counter level.
7. Before adjustment, allow for 30 seconds or more after depressing of the PLAY pushbutton.

Mode: playback



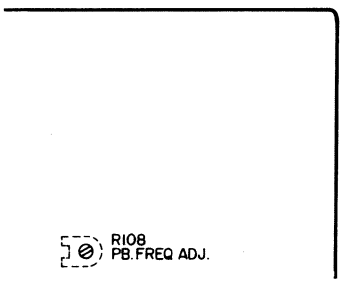
5B-5 Playback Equalizer Adjustment

SET UP

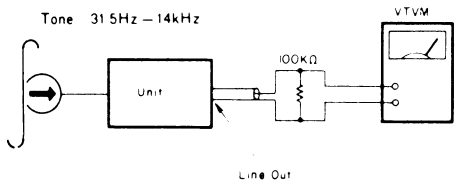
1. Power voltage:
   50 Hz/60 Hz voltage rated for the unit to be used in a market country. DC 6 V
2. Output terminal: LINE OUT
3. Load: 100 k ohm
   Measuring instrument input impedance.
4. Test tape: MTT-116U

PROCEDURES

1. Play the test tape MTT-116U. Let the 315 Hz signal level be reference as 0 dB.
2. Adjust R108 (5 kΩ) for 10 kHz frequency response of 0 dB in reference to the 315 Hz signal level.



Mode: playback



5B-6 Playback Output Level Adjustment

SET UP

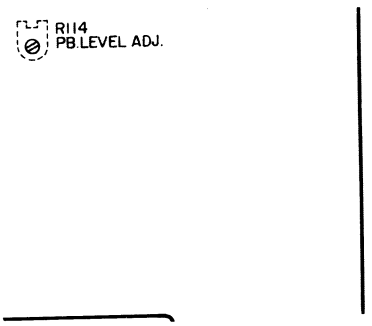
1. Power voltage:
   50 Hz/60 Hz AC voltage rated for the unit to be used in a market country. DC 6 V
2. Output terminal: LINE OUT
3. Load: 100 k ohm
   Measuring instrument input impedance.
4. Test tape used: MTT-150

PROCEDURES

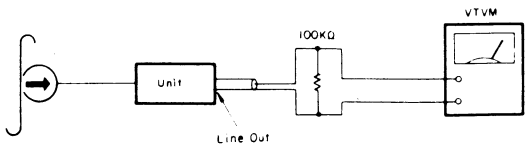
Play the test tape MTT-150 back. Adjust R114 (20 kΩ) to 0 VU at the meter. At that time let the output level of LINE OUT be 700 mV ±3 dB.

CAUTION

This adjustment should be performed after the one for the playback equalizer. If the playback equalizer is adjusted after the playback output adjustment, the playback output should be readjusted.



Mode: playback



5B-7 Recording Bias Current Adjustment (Temporal)

SET UP

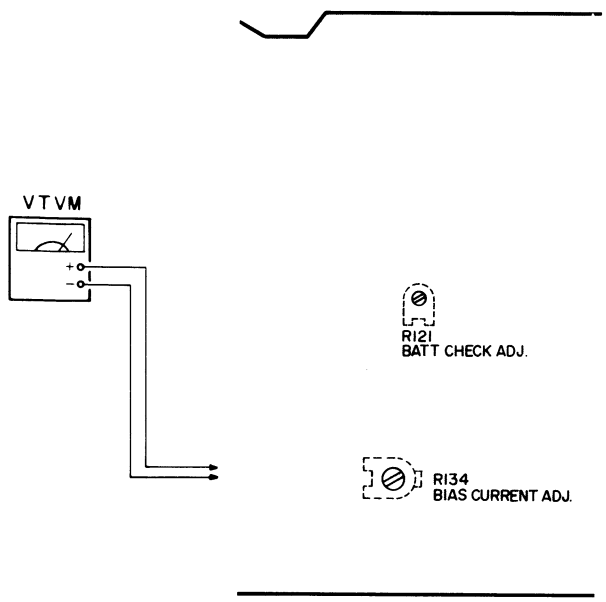
1. Power voltage:
   50 Hz/60 Hz voltage rated for the unit to be used in a market country. DC 6 V
2. Load: Open
   Measuring instrument input impedance.

PROCEDURES

1. Set up the unit in recording mode of operation. Connect the VTVM across each end of R145. Adjust the semi-fixed resistor R134 (50 kΩ) for 0.8 mV VTVM read.

CAUTION

The measured recording bias current may be different from the actual value. If so, fix the VTVM lead wire connected to the 10 Ω resistor for minimum VTVM read.



5B-8 Tape Speed Measurement

SET UP

1. Power voltage: 50/60 Hz AC voltage rated for the unit to be used in a market country.
2. Ouput terminal: EXT. SPEAKER
3. Load: 8 Ω
4. Tone control position: MAX
5. Test tape used: MTT-111, 3 kHz tone
6. Set position: Horizontal
   Vertical

PROCEDURES

Play the wound-up end of the test tape MTT-111 back. Read the frequency counter indication.

STANDARD

Tape speed: 4.8 cm/sec ±2%
Frequency: 2940 to 3060 Hz

CAUTION

The tape deck should be leveled as specified for this measurement.

5B-9 Wow and Flutter Measurement

SET UP

1. Power voltage: 50 Hz/60 Hz AC voltage rated for the unit to be used in a market country.
2. Output terminal: EXT. SPEAKER
3. Tone control position: MAX
4. Test tape used: MTT-111
5. Load: Measuring instrument input impedance.
   8 Ω
6. Wow and flutter meter function switch position:
   NAB Weight . . . for U.S.A. & Canada Model
   DIN Peak . . . . . for Europe Model

PROCEDURES

Play the test tape MTT-111 back. Read the wow & flutter meter indication.

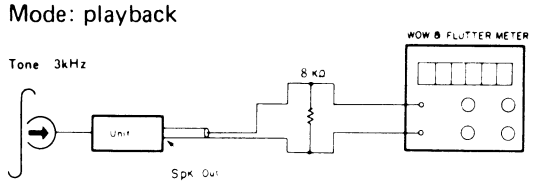
STANDARD

Less than 0.12 NAB Weight
0.2 DIN Peak

CAUTION

The measurement should be performed at the wound-up end of the test tape.

Mode: playback



5B-10 Playback Output Level Measurement

SET UP

1. Power voltage:
   50 Hz/60 Hz AC voltage rated for the unit to be used in a market country. DC 6 V
2. Output terminal: LINE OUT
3. Load: Measuring instrument input impedance.
   100 kΩ
4. Test tape used: MTT-112

PROCEDURES

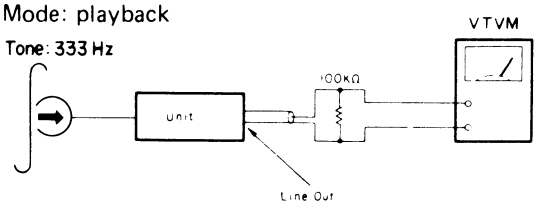
Play the tape back in the normal playback state.
Read the VTVM indication.

STANDARD

Within 700 mV ±3 dB

Mode: Playback
Tone: 333 Hz

Mode: playback



5B-11 Playback Signal to Noise Ratio Measurement

SET UP

1. Power voltage:
   50 Hz/60 Hz AC voltage rated for the unit to be used in a market country. DC 6 V
2. Output terminal: LINE OUT
   (IEC-A curve filter use)
3. Load: Measuring instrument input impedance.
   100 kΩ
4. Test tape used: MTT-112

PROCEDURES

1. Load the test tape MTT-112. Set up the unit to the normal playback state.
2. Read playback output as a 0 dB reference. Then playback blank tape and note the output level drop in dB.

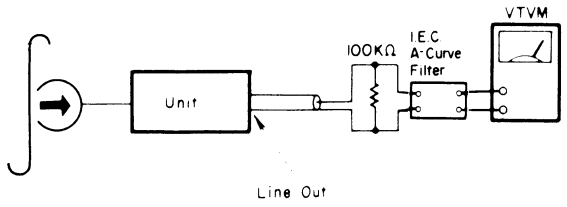
STANDARD

Greater than DC 52 dB, AC 49 dB

CAUTIONS

1. Arrange the unit power cord for minimum hum component.
2. Effect by induction noises should be minimuized for the measurement.

Mode: playback
Tone 333Hz



5B-12 Playback Frequency Response Measurement

SET UP

1. Power voltage:
   50 Hz/60 Hz AC voltage rated for the unit to be used in a market country. DC 6 V
2. Output terminal: LINE OUT
3. Load: Measuring instrument input impedance.
   100 kΩ
4. Test tape used: MTT-116U

PROCEDURES

1. Play the test tape MTT-116U back. Let the 315 Hz output level be 0 dB as reference level.
2. Read
   the 315 Hz 0 dB reference level.

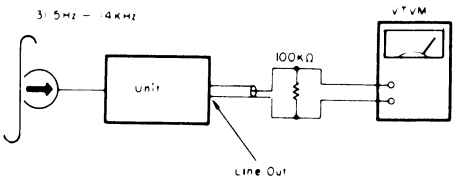
CAUTION

Since the test tapes used may involve same head azimuth difference, the head azimuth should be corrected at the highest frequency of each test tape before measurement.

STANDARD

In reference to the 315 Hz, 0 dB signal output level,
+3 dB to −3 dB at 50 Hz
+3 dB to −3 dB at 10 kHz.

Mode: playback



5B-13 Record-Playback Output Level Measurement

SET UP

1. Power voltage:
   50 Hz/60 Hz AC voltage rated for the unit to be used in a market country. DC 6 V
2. Output terminal: LINE OUT
3. Input signal: 1 kHz -60 dB
4. Recording level control position: 0VU Adjust (Manual)
5. Load: Measuring instrument input impedance.
   100 kΩ
6. Test tape used: AC-211

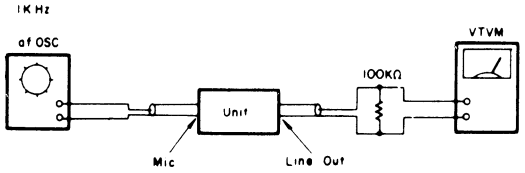
PROCEDURES

1. Record the 1 kHz -60 dB signal in the normal recording state.
2. Play the recorded signal back. Read the VU meter indication.

STANDARDS

Normal position: 630 mV ±3 dB

Mode: reocrd



5B-14 Record-Playback, Harmonic Distortion Measurement

SET UP

1. Power voltage:
   50 Gz/60 Hz AC voltage rated for the unit to be used in a market country. DC 6 V
2. Input signal: 1 kHz -60 dB
3. Recording level control position:
   0 VU Adjust (Manual)
4. Output level:
   Same as the recorded signal level. (Playback)
5. Output terminal: LINE OUT
6. Load: Measuring instrument input impedance: 100 kΩ
7. Test tape used: AC-211

PROCEDURES

1. Record the 1 kHz signal in the normal recording state.
2. Play the recorded signal back in the normal playback state. Calibrate the harmonic distortion meter to 100% at the INPUT CONT. Adjust the adjusting knob for minimum meter pointer deflection, and read the harmonic distortion.

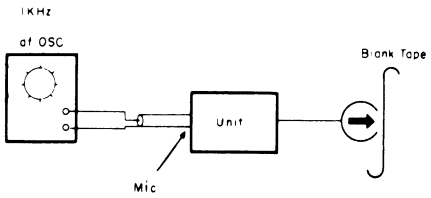
STANDARDS

1. Less than 2.5%

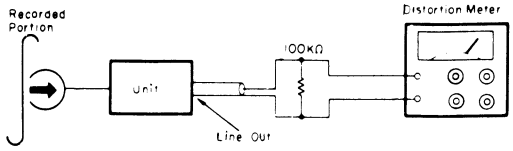
CAUTIONS

1. Be sure to demagnetize the heads as the measured values may deviate from the accurate values.
2. Note that excessive wow and flutter also causes deviation of the measured values.

Mode: record



Mode: playback



5B-15 Record-Playback Signal-to-Noise Ratio Measurement

SET UP

1. Power voltage: 50 Hz/60 Hz AC voltage rated for the unit to be used in a market country. DC 6V
2. Input signal: 1 kHz -60 dB
3. Recording level control position:
   +0.8 VU Adjust (Manual)
4. Output level:
   Same as the recorded signal level. (Playback)
5. Output terminal: LINE OUT (Use the IEC A curve filter.)
6. Load: Measuring instrument input impedance. 100 kΩ
7. Test tape used: AC-211

PROCEDURES

1. Record the 1 kHz signal and adjust the REC control to +0.8 dB of VU meter.
2. Disconnect the input signal from the microphone jack. In this state, record no signal.
3. Play the 1 kHz signal back in the normal playback state. Let the output level be 0 dB as reference level.
4. Read difference between the recorded 0 dB reference output and no signal output levels.

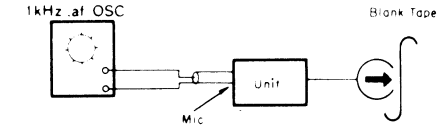
STANDARDS

Greater than DC 50 dB, AC 46 dB

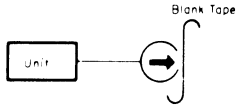
CAUTION

Arrange the tape deck power cord for minimum hum component. Use the IEC A curve filter.

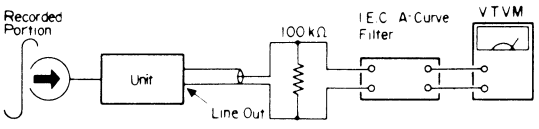
Mode: record



Mode: record



Mode: playback



5B-16 Record-Playback Frequency Response Measurement

SET UP

1. Power voltage:
   50 Hz/60 Hz AC voltage rated for the unit to be used in a market country. DC 6 V
2. Input signal: -80 dB
3. Output terminal: LINE OUT
4. Test tape used: AC-211

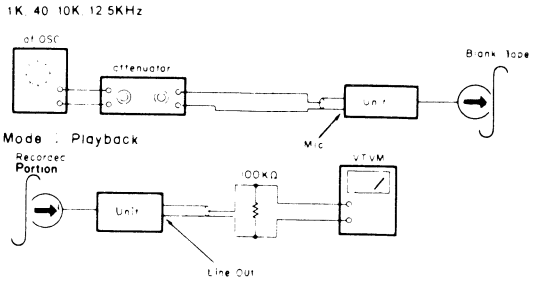
PROCEDURES

1. Record the 1 kHz signal in the normal recording state. (0 VU set at -60 dB) In turn, reduce the input level by 20 dB with an attenuator. Then, record the 1 kHz, 50 Hz and 10 kHz signals.
2. Play the recorded 1 kHz signal back in the normal playback state.
3. Let the 1 kHz, -20 dB down signal level be 0 dB as reference level. Read difference of the 50 Hz and 10 kHz signals output levels from the 1 kHz signal 0 dB reference level.

STANDARDS

Normal position: +3 dB to -3 dB at 50 Hz
+3 dB to -3 dB at kHz

Mode: record



5B-17 Erasing Effect Measurement

SET UP

1. Power voltage:
   50 Hz/60 Hz AC voltage rated for the unit to be used in a market country. DC 6 V
2. Input signal: 100 Hz, -50 dB signal with +10 dB as 0 VU.
3. Output terminal: LINE OUT
4. Test tape used: AC-211

PROCEDURES

1. Record the 100 Hz input signal in the normal recording state. (0 VU set at -60 dB)
2. In turn, increase the input level by 10 dB with the attenuator, and record it.
3. Rewind a half portion of the 10 dB-up tape and record in no-signal state, or erase, on the portion with the input signal disconnected from the microphone jack.
4. Playback in the normal playback state the input signal recorded in the normal recording state.
5. In turn, let the 10 dB-up recorded signal level be 0 dB as reference level. Read difference of the level at the erased position from the 0 dB reference level.

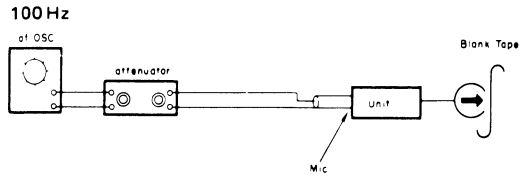
STANDARD

Greater than 55 dB

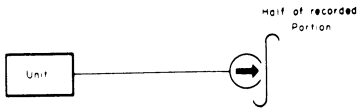
CAUTION

Use the 36 dB/oct filter.

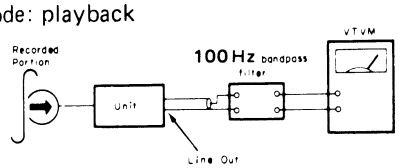
Mode: record



Mode: record



Mode: playback



5B-18 Leak Bias Measurement

SET UP

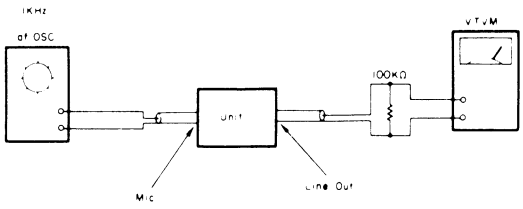
1. Power voltage:
   50 Hz/60 Hz AC voltage rated for the unit to be used in a market country. DC 6 V
2. Input signal: 1 kHz, 60 dB signal
3. Output terminal: LINE OUT

PROCEDURES

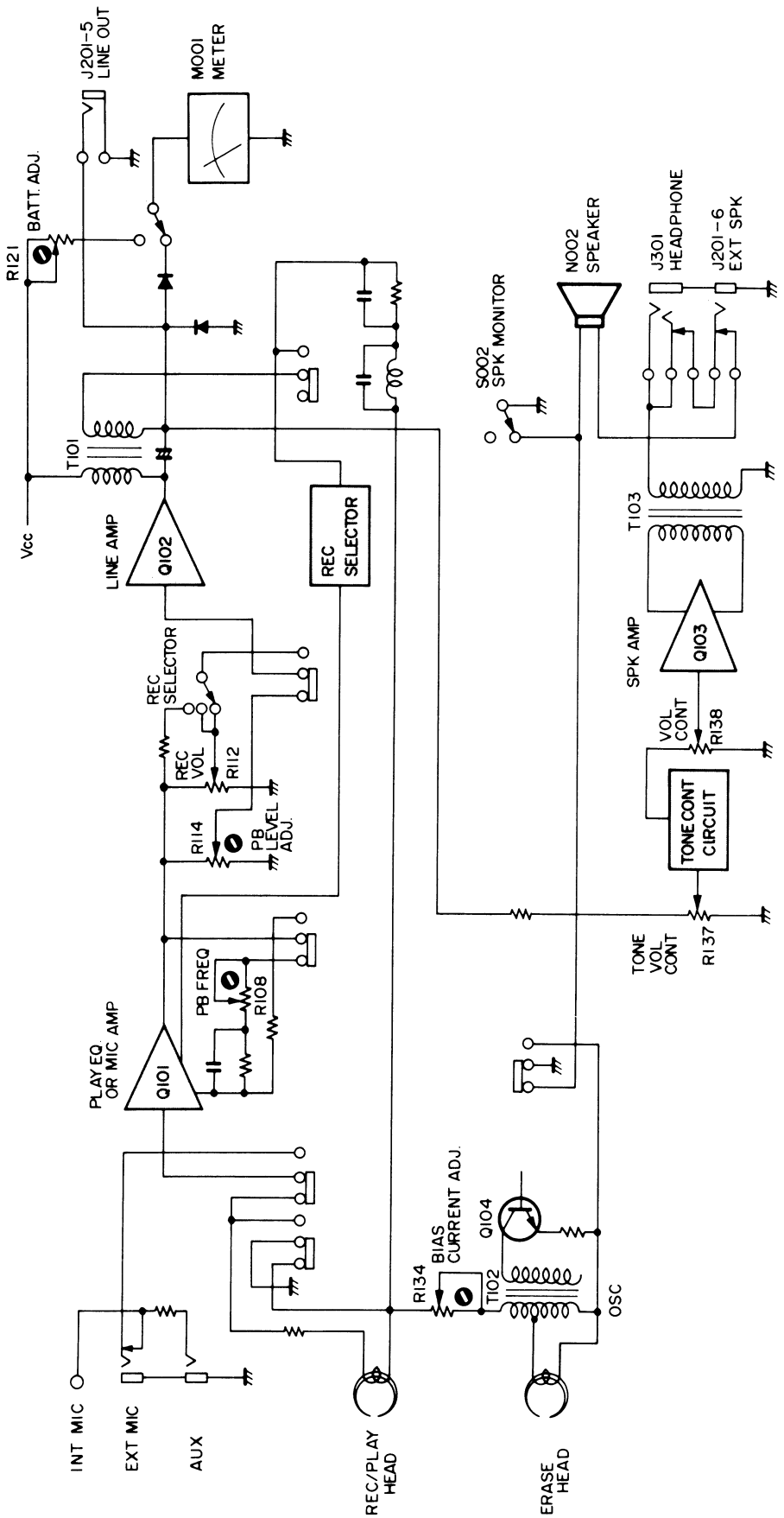
Record the 1 kHz input signal in the normal recording state. Let the monitor output level at the LINE OUT terminal be 0 dB as reference level. Read difference of the output level having the input signal disconnected from the 0 dB reference level.

STANDARD

Lower than 35 dB

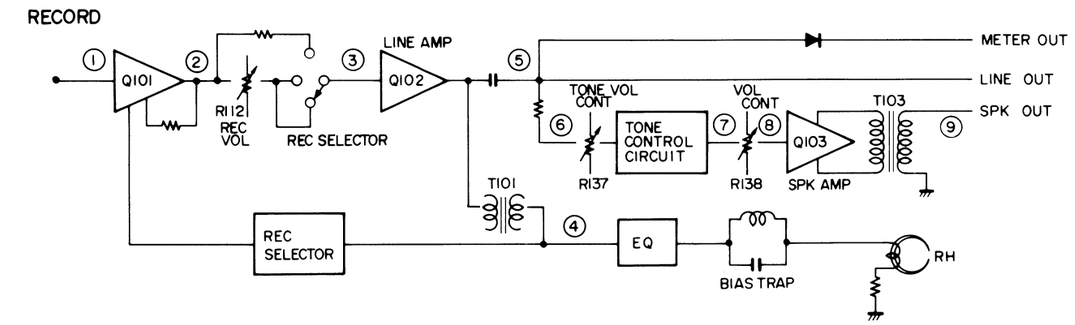


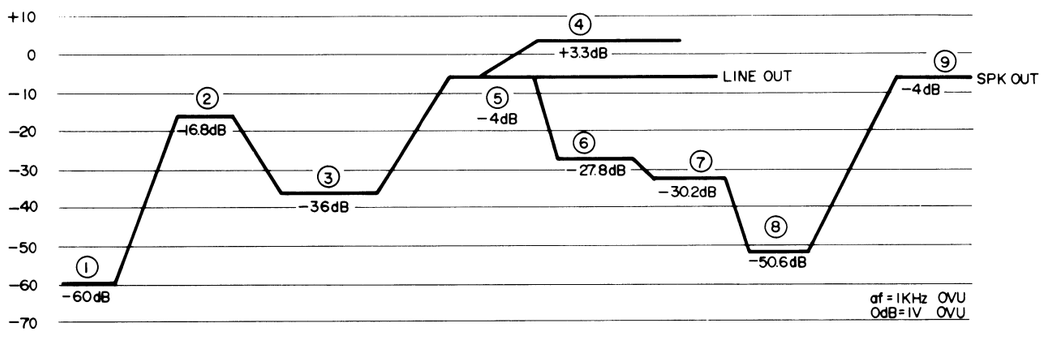
6. BLOCK DIAGRAM



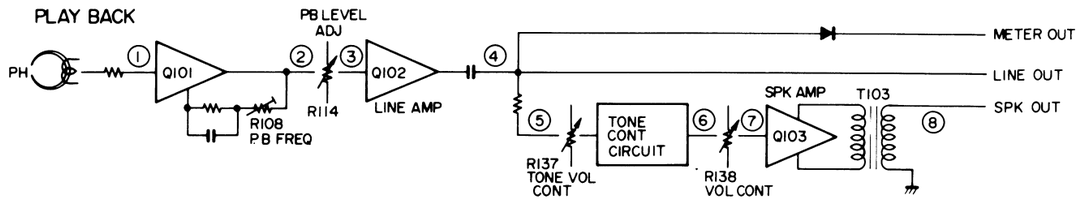
7. LEVEL DIAGRAM

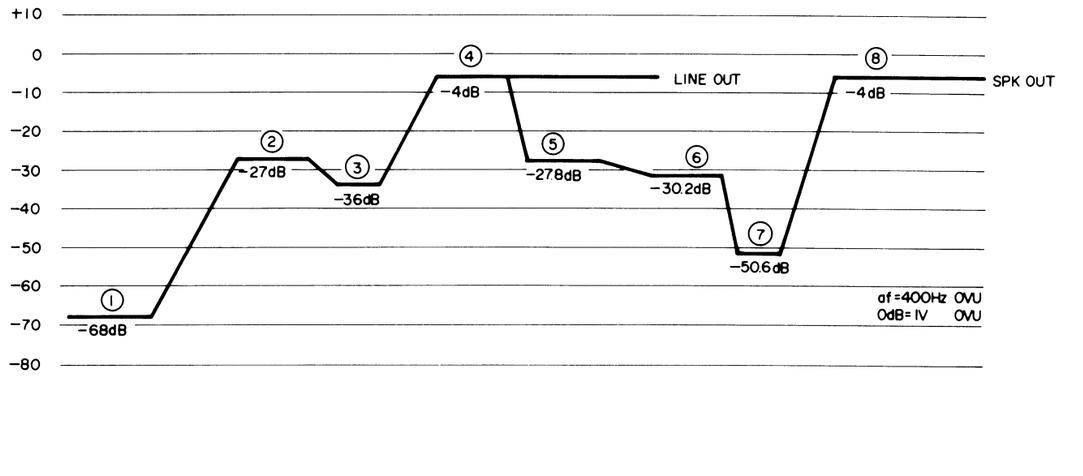
RECORD



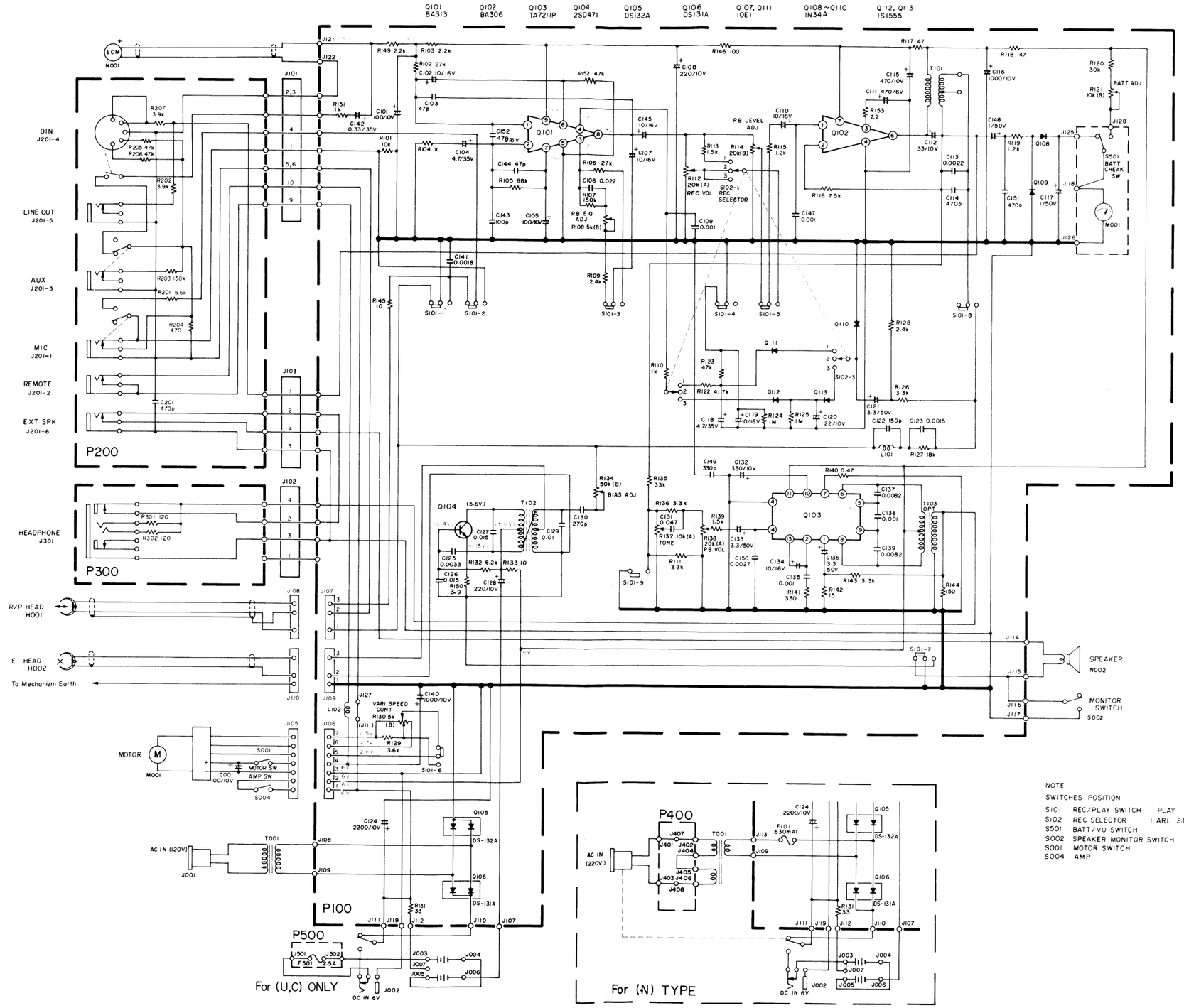


PLAY BACK





8. SCHEMATIC DIAGRAM

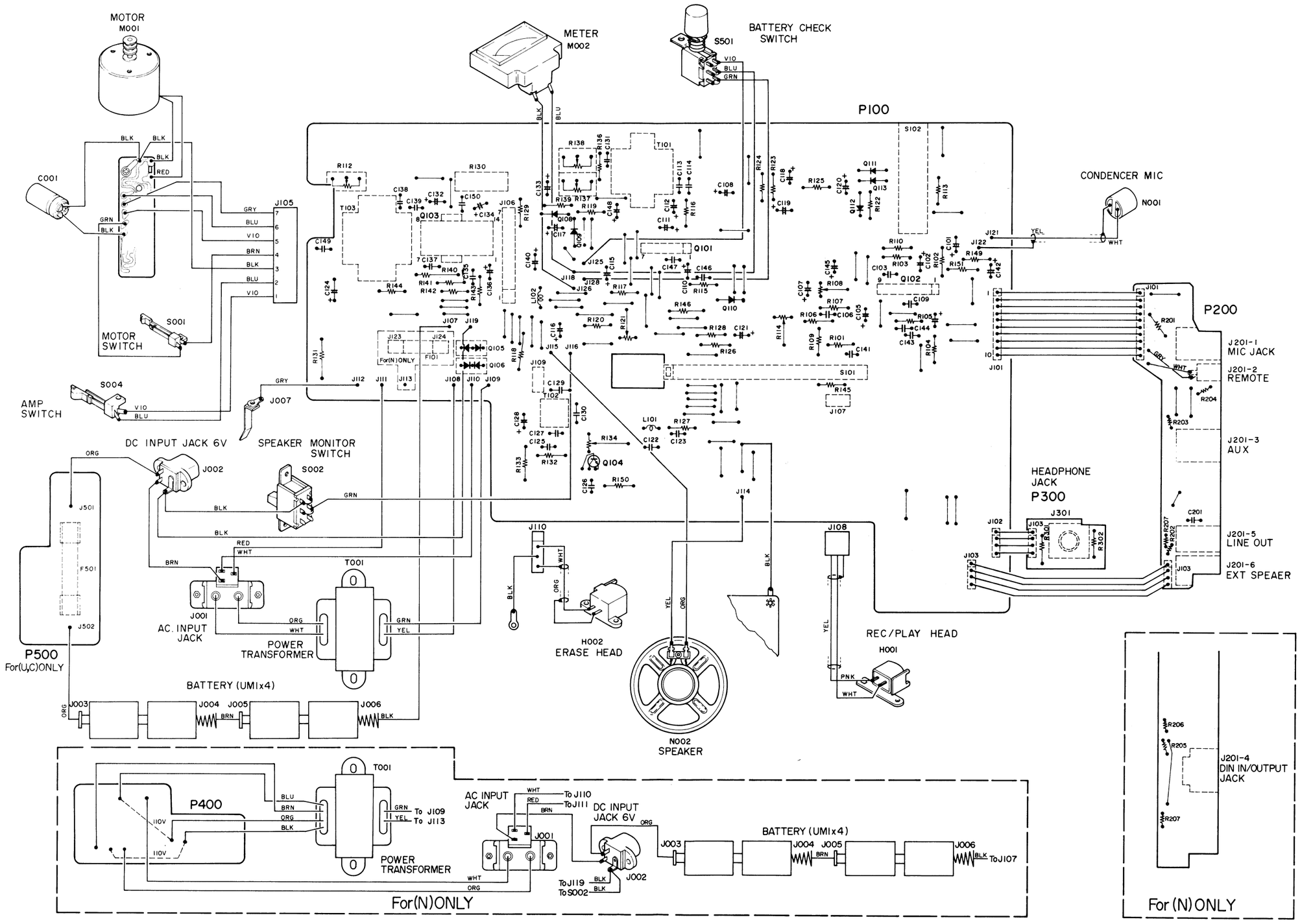


NOTE

SWITCHES POSITION

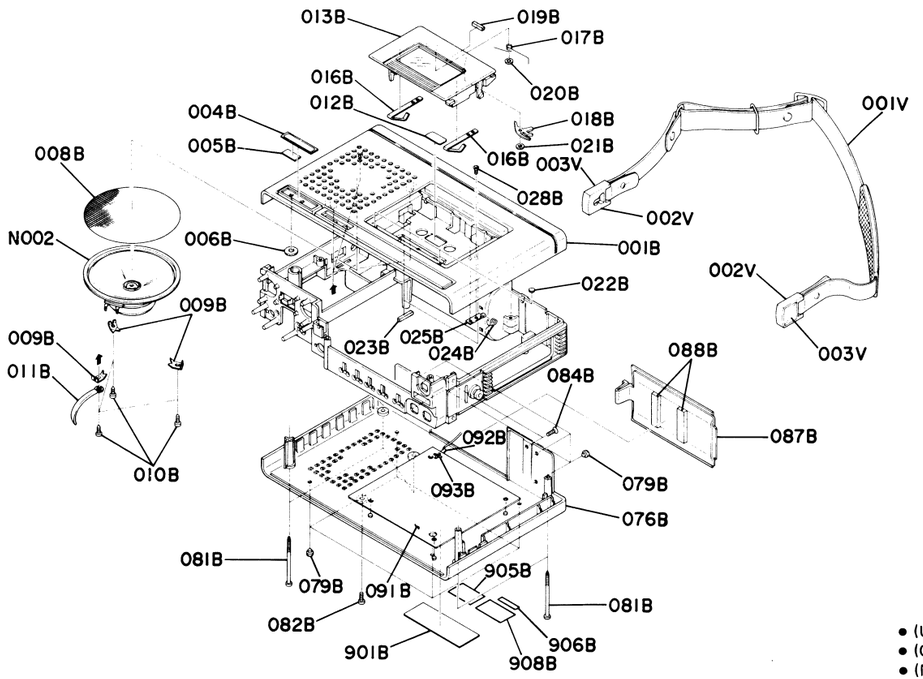
S101	REC/PLAY SWITCH	PLAY
S102	REC SELECTOR	1:ARL 2:MANUAL 3:LIMITER
S501	BATT/VU SWITCH	
S002	SPEAKER MONITOR SWITCH	
S001	MOTOR SWITCH	
S004	AMP	

9. CIRCUIT BOARD DIAGRAM



10. EXPLODED VIEW AND PARTS LIST

• [C01-99] Top Case and Bottom Lid

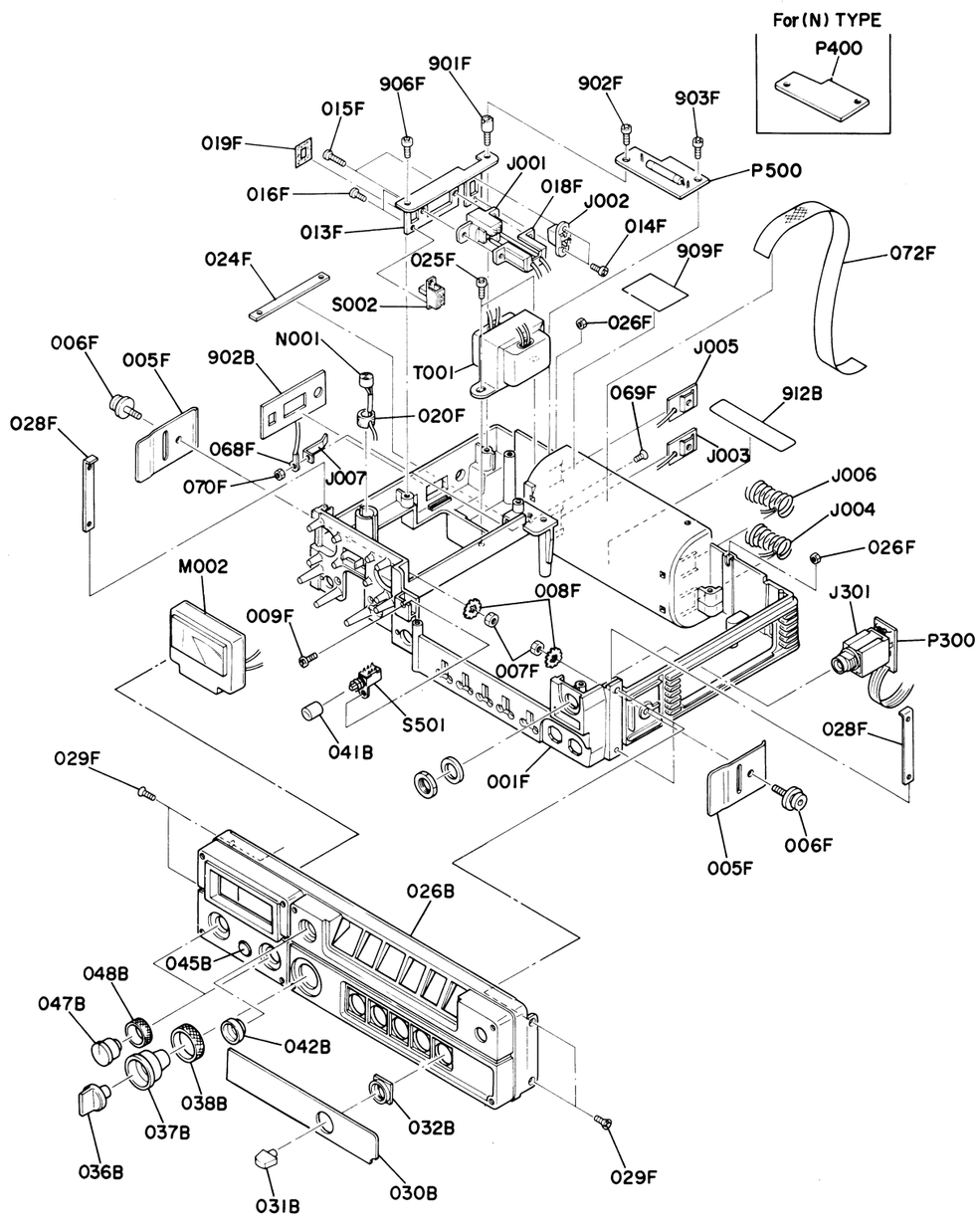


• (U) for U.S.A.
• (C) for Canada
• (N) for Europe

REF. DESIG.	Q'TY U	Q'TY C	Q'TY N	PART NO.	DESCRIPTION
*	1			4224064400	Case Assembly (A.B.C.D)
*		1		4224064410	Case Assembly (A.B.C1.D)
*			1	4224064420	Case Assembly (A.B.C2.D)
A	1	1	1	4224064430	Case Assembly, Top
001B	1	1	1	4223064053	Case
004B	1	1	1	4223063010	Escutcheon
005B	1	1	1	4223107030	Sheet
006B	1	1	1	4223107010	Sheet
008B	1	1	1	3426202022	Net
012B	1	1	1	3347274010	Reflector
022B	2	2	2	3412056062	Buffer
023B	2	2	2	3426056020	Buffer
C	1			4224257400	Lid Assembly, Bottom
C1		1		4224257410	Lid Assembly
C2			1	4224257420	Lid Assembly
076B	1	1	1	4223257030	Lid
079B	8	8	8	3441057010	Leg
091B	1	1	1	4223109010	Shield
092B	1	1	1	62031340W0	Lug
093B	1	1	1	56483040E0	Eyelet
901B	1			4224265010	Indicator
901B		1		4224265020	Indicator
901B			1	4224265030	Indicator
D	1	1	1	4224257420	Lid Assembly, Battery
087B	1	1	1	4223257040	Lid
088B	2	2	2	3411056050	Buffer

REF. DESIG.	Q'TY U	Q'TY C	Q'TY N	PART NO.	DESCRIPTION	
F	1	1	1	4224064450	Case Assembly, Cassette	
013B	1	1	1	4223064512	Case	
016B	2	2	2	4223115050	Spring	
017B	1	1	1	4223115040	Spring	
018B	1	1	1	3411354142	Lever	
019B	1	1	1	3411056070	Buffer	
020B	1	1	1	54020301E0	Washer	
021B	1	1	1	54022601E0	Washer	
G	1	1	1	4223156400	Strap Assembly	
001V	1	1	1	4223156010	Strap	
002V	2	2	2	3411155012	Hanger	
003V	2	2	2	3411063140	Escutcheon	
009B	3	3	3	4170005010	Clamper	
010B	3	3	3	51280308B0	B.H. TAP. Screw	B3 x 8
011B	1	1	1	1210005010	Clamper	
024B	1	1	1	4223115013	Spring	
025B	1	1	1	4223160070	Bracket	
028B	2	2	2	51040205S0	F.H.M. Screw	F2 x 5
081B	5	5	5	5128402950	B.H. TAP. Screw	B4 x 29
082B	1	1	1	5110308S9	B.H.M. Screw	B3 x 8
084B	2	2	2	5114031059	O.C.H.M. Screw	3 x 10
905B		1		2457861040	Label	
905B			1	9510911040	Label	
905B	1			9511201100	Label	
906B		1		9510911050	Label	
908B		1		4156861010	Label	
N002	1	1	1	QK01002100	Speaker	

• [C02-99] Front Case and Chassis Assembly

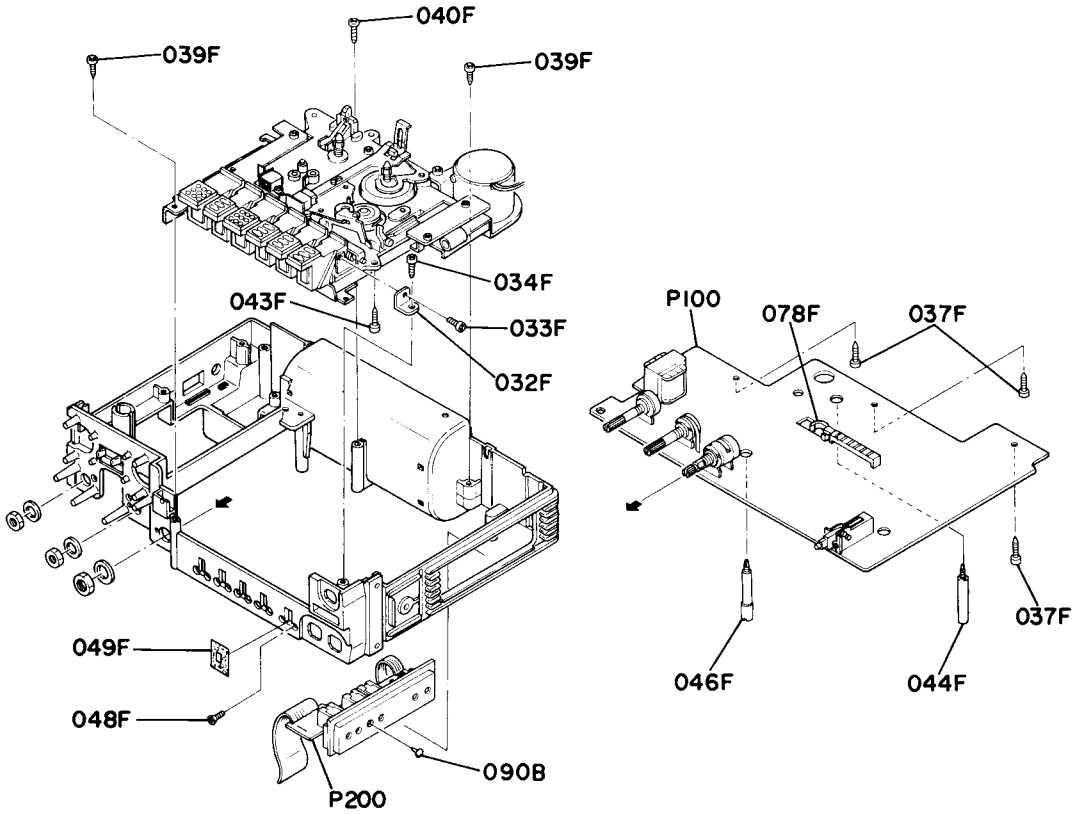


- (U) for U.S.A.
- (C) for Canada
- (N) for Europe

REF. DESIG.	Q'TY U	C	N	PART NO.	DESCRIPTION
B	1	1	1	4224064440	Case Assembly, Front
026B	1	1	1	4223064060	Case
030B	1	1	1	4224063010	Escutcheon
032B	1	1	1	4223259010	Bushing
042B	1	1	1	4223353032	Ring
045B	1	1	1	4224259010	Ring
E	1	1		4223105400	Chassis Assembly
E1			1	4223105410	Chassis Assembly
001F	1	1	1	4223105010	Chassis
005F	2	2	2	4223063030	Escutcheon
006F	2	2	2	4223112010	Shaft
007F	2	2	2	53110403A9	Nut
008F	2	2	2	54080400R0	Washer
024F	1	1	1	4223160060	Bracket
028F	2	2	2	4223160030	Bracket
072F	1	1	1	3397007010	Strip
902B	1	1		4223265042	Indicator
902B			1	4223265052	Indicator
912B	1	1	1	3397861020	Label
L	1	1	1	4223154400	Knob Assembly, Volume
037B	1	1	1	4223154050	Knob
038B	1	1	1	4223353010	Ring
M	2	2	2	4223154410	Knob Assembly, Rec/Speed
047B	2	2	2	4223154062	Knob
048B	2	2	2	4223353020	Ring
031B	1	1	1	4223154010	Knob
036B	1	1	1	4223154042	Knob
041B	1	1	1	4225154010	Knob
009F	1	1	1	51102606A0	B.H.M. Screw B2.6 x 6
013F	1	1	1	4223160010	Bracket
014F	2	2	2	51100205A0	B.H.M. Screw B2 x 5
015F	2	2	2	51102610A0	B.H.M. Screw B2.6 x 10
016F	2	2	2	51100204A0	B.H.M. Screw B2 x 4
018F	1	1	1	3370053010	Cover
019F	1	1	1	4223107040	Sheet
020F	1	1	1	4170271032	Holder
025F	2	2	2	51100306A9	B.H.M. Screw B3 x 6
026F	2	2	2	53110303A9	Hexagon Nut
029F	4	4	4	51040308A9	F.H.M. Screw F3 x 8

REF. DESIG.	Q'TY U	C	N	PART NO.	DESCRIPTION
068F	1	1	1	62021030W0	Lug
069F	1	1	1	51040206S0	F.H.M. Screw F2 x 6
070F	1	1	1	53110203A0	Hexagon Nut
901F	1	1	1	4223101020	Support
902F	1	1	1	51100306A9	B.H.M. Screw B3 x 6
903F	1	1	1	51280310B0	B.H. TAP. Screw B3 x 10
906F	1	1	1	51280308B0	B.H. TAP. Screw B3 x 8
909F		1		2911861160	Label
909F	1			9510221010	Label
J001			1	YJ04000500	AC Jack
J001	1	1		YJ04000510	AC Jack
J002	1	1	1	YJ04000550	DC Jack
J003	1	1	1	YL12010710	Terminal (+)
J004	1	1	1	YL11010090	Terminal (–)
J005	1	1	1	YL12010710	Terminal (+)
J006	1	1	1	YL11010090	Terminal (–)
J007	1	1	1	YL12010720	Terminal, Rechargeable
M002	1	1	1	IM11055120	D.C. Meter
N001	1	1	1	MS50000020	Mic, Unit
S002	1	1	1	SS02020520	Slide Switch
S501	1	1	1	SP02020340	Push Switch Batt. Check
T001	1	1		TS14101380	Power Transformer
T001			1	TS14124030	Power Transformer
P300	1	1	1	YK42241530	P.W. Board, Headphone
	1	1	1	ZZ42241530	P.W. Board Assembly
J301	1	1	1	YJ01001120	Jack, Headphone
P400			1	YK42241540	P.W. Board, Power
			1	ZZ42248540	P.W. Board Assembly
P500	1	1		YK42241550	P.W. Board, Battery Check
	1	1		ZZ42241550	P.W. Board Assembly

• [M01-99] P.W. Board (Rec/Play)

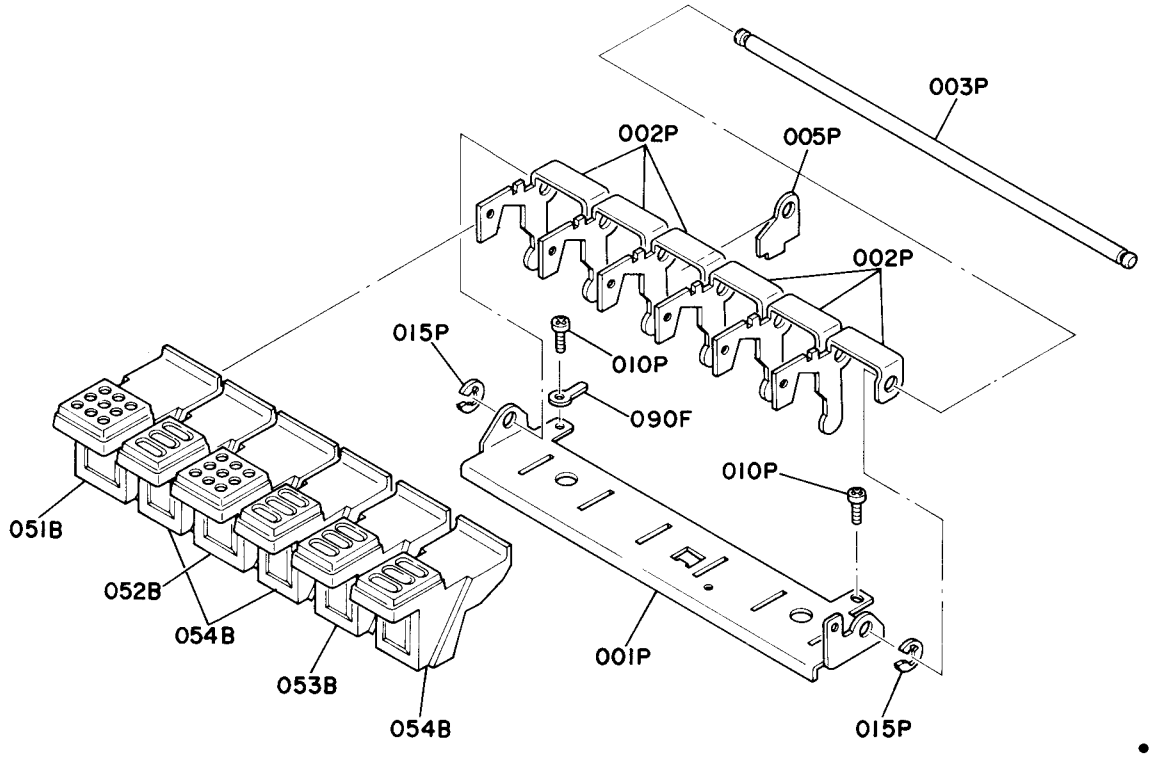


• (U) for U.S.A.
• (C) for Canada
• (N) for Europe

REF. DESIG.	Q'TY U	C	N	PART NO.	DESCRIPTION	
090B	1	1	1	74480019G0	Hole Plug	
032F	1	1	1	4223160020	Bracket	
033F	1	1	1	51060304A9	P.H.M. Screw	P3 x 4
034F	1	1	1	51280308B0	B.H. TAP. Screw	B3 x 8
037F	3	3	3	51280308B0	B.H. TAP. Screw	B3 x 8
039F	2	2	2	51280308B0	B.H. TAP. Screw	B3 x 8
040F	1	1	1	51280310B0	B.H. TAP. Screw	B3 x 10
043F	1	1	1	51280310B0	B.H. TAP. Screw	B3 x 10
044F	1	1	1	4223101030	Support	
046F	1	1	1	4223101010	Support	
048F	2	2	2	51040306S9	F.H.M. Screw	F3 x 6

REF. DESIG.	Q'TY U	C	N	PART NO.	DESCRIPTION
049F	1	1	1	4223107020	Sheet
078F	1	1	1	4223354032	Lever
P100	1	1	1	YK42241510	P.W. Board, Rec/Play
	1	1	1	ZZ42241510	P.W. Board Assembly
P200	1	1	1	YK42241520	P.W. Board, Jack
	1	1		ZZ42241520	P.W. Board Assembly
			1	ZZ42248520	P.W. Board Assembly

• [P01-99] Operation Levers and Buttons



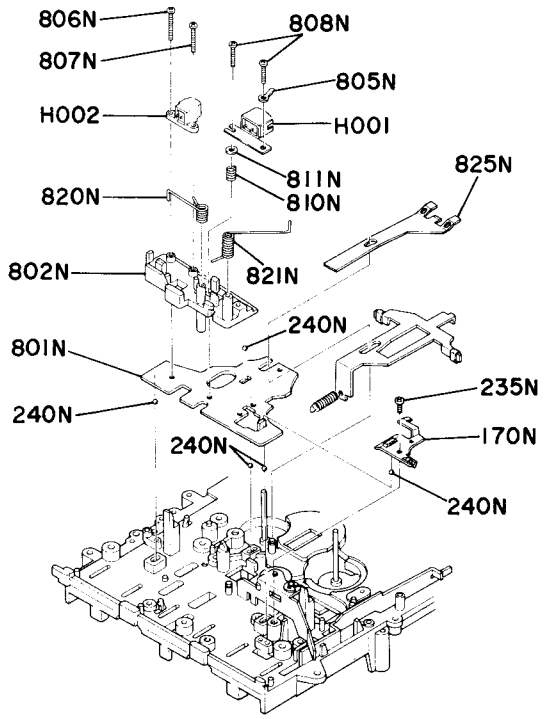
• (U) for U.S.A.
• (C) for Canada
• (N) for Europe

REF. DESIG.	Q'TY U	C	N	PART NO.	DESCRIPTION
H	1	1	1	4223270400	Button Assembly (Rec)
051B	1	1	1	4223270012	Button
002P	1	1	1	4382354060	Lever
I	1	1	1	4223270410	Button Assembly (Play)
052B	1	1	1	4223270022	Button
002P	1	1	1	4382354060	Lever
J	1	1	1	4223270420	Button Assembly (Stop)
053B	1	1	1	4223270032	Button
002P	1	1	1	4382354060	Lever
K	3	3	3	4223270430	Button Assembly (F.F, Rew, Pause)
054B	3	3	3	4223270042	Button
002P	3	3	3	4382354060	Lever

REF. DESIG.	Q'TY U	C	N	PART NO.	DESCRIPTION
001P	1	1	1	4382160030	Bracket
003P	1	1	1	4382112110	Shaft
005P	1	1	1	4382104020	Retainer
010P	2	2	2	51300308B0	P.H. TAP. Screw P3 x 8
015P	2	2	2	64000400R0	RG Ring, E Type
090F	1	1	1	62031650W0	Lug

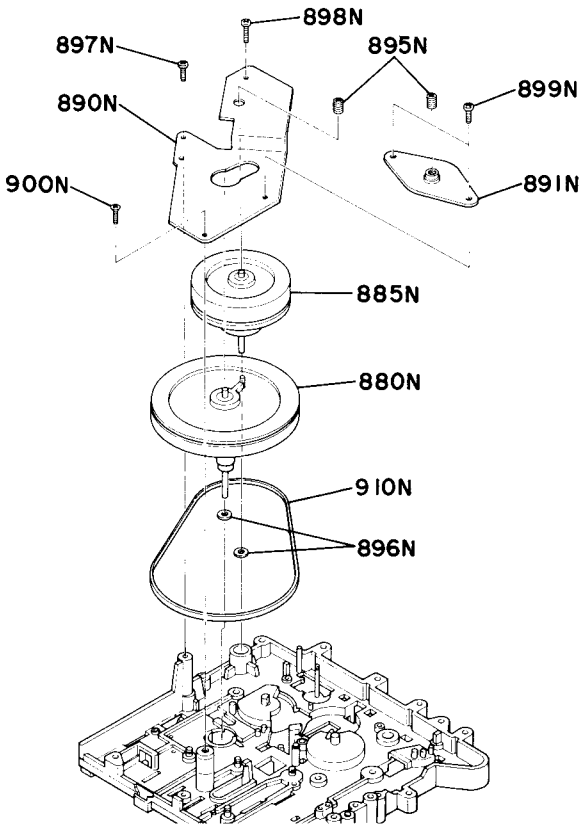
• (U) for U.S.A.
• (C) for Canada
• (N) for Europe

• [P02-99] Head Chassis



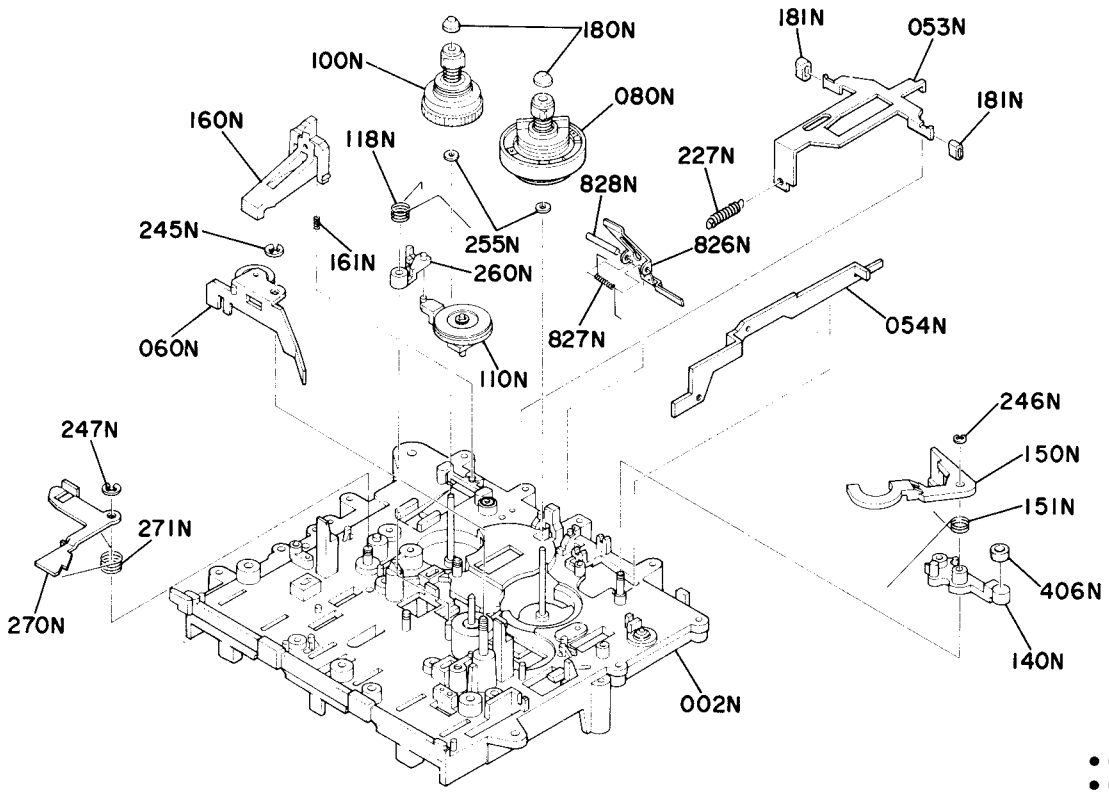
REF. DESIG.	Q'TY U	C	N	PART NO.	DESCRIPTION	
170N	1	1	1	4367115170	Spring	
235N	1	1	1	51300308B0	P.H. TAP. Screw	P3 x 8
240N	5	5	5	61020010T0	Ball	
801N	1	1	1	4367105023	Chassis	
802N	1	1	1	4367160010	Bracket	
805N	1	1	1	62021030W0	Lug	
806N	1	1	1	51100212A0	B.H.M. Screw	B2 x 12
807N	1	1	1	51100210A0	B.H.M. Screw	B2 x 10
808N	2	2	2	51100210A0	B.H.M. Screw	B2 x 10
810N	1	1	1	4380115090	Spring	
811N	1	1	1	3444118070	Spacer	
820N	1	1	1	4367115050	Spring	
821N	1	1	1	4367115040	Spring	
825N	1	1	1	4380115010	Spring	
H001	1	1	1	LH41551020	Rec/Play Head	
H002	1	1	1	LH31000440	Erase Head	

• [P03-99] Flywheel



REF. DESIG.	Q'TY U	C	N	PART NO.	DESCRIPTION	
880N	1	1	1	4382273500	Flywheel	
885N	1	1	1	4382273510	Flywheel	
890N	1	1	1	4382104010	Retainer	
891N	1	1	1	4382104700	Retainer	
895N	2	2	2	3483164020	Adjuster	
896N	2	2	2	59264702G9	Washer	
897N	1	1	1	51300310B0	P.H. TAP. Screw	P3 x 10
898N	1	1	1	51060306A9	P.H.M. Screw	P3 x 6
899N	2	2	2	51060305A9	P.H.M. Screw	P3 x 5
900N	1	1	1	51340310P0	F.H. TAP. Screw	F3 x 10
910N	1	1	1	4382264010	Belt	

• [P04-99] (1/2) Parts Assembled on the Top of the Chassis

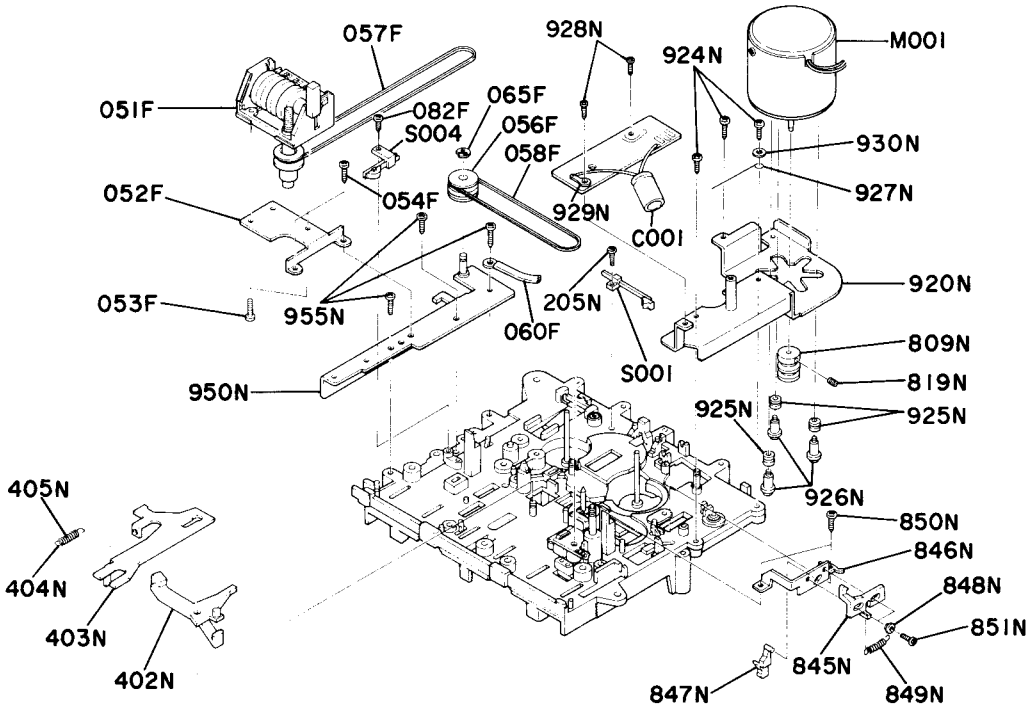


• (U) for U.S.A.
• (C) for Canada
• (N) for Europe

REF. DESIG.	Q'TY U	C	N	PART NO.	DESCRIPTION
002N	1	1	1	4382105700	Chassis Assembly
053N	1	1	1	4367354090	Lever
054N	1	1	1	4367354120	Lever
060N	1	1	1	4367002700	Arm, Pinch Roller
080N	1	1	1	4367004700	Table
100N	1	1	1	4367004710	Table
110N	1	1	1	4367002730	Arm
118N	1	1	1	4367115310	Spring
140N	1	1	1	4367354770	Lever
150N	1	1	1	4367002050	Arm
151N	1	1	1	4367115130	Spring
160N	1	1	1	4367354084	Lever
161N	1	1	1	4367115070	Spring
180N	2	2	2	4367067010	Cap
181N	2	2	2	4367263010	Brake
227N	1	1	1	4367115210	Spring
245N	1	1	1	64002500R0	RG Ring, E Type
246N	1	1	1	64001500R0	RG Ring, E Type
247N	1	1	1	64000300R0	RG Ring, E Type
255N	2	2	2	59020402G9	Washer

REF. DESIG.	Q'TY U	C	N	PART NO.	DESCRIPTION
260N	1	1	1	4367354110	Lever
270N	1	1	1	4380002010	Arm, Inter Lock
271N	1	1	1	4380115040	Spring
406N	1	1	1	4367055040	Collar
826N	1	1	1	4383115010	Spring
827N	1	1	1	4380115033	Spring
828N	1	1	1	4380112010	Shaft

• [P04-99] (2/2) Parts Assembled on the Top of the Chassis

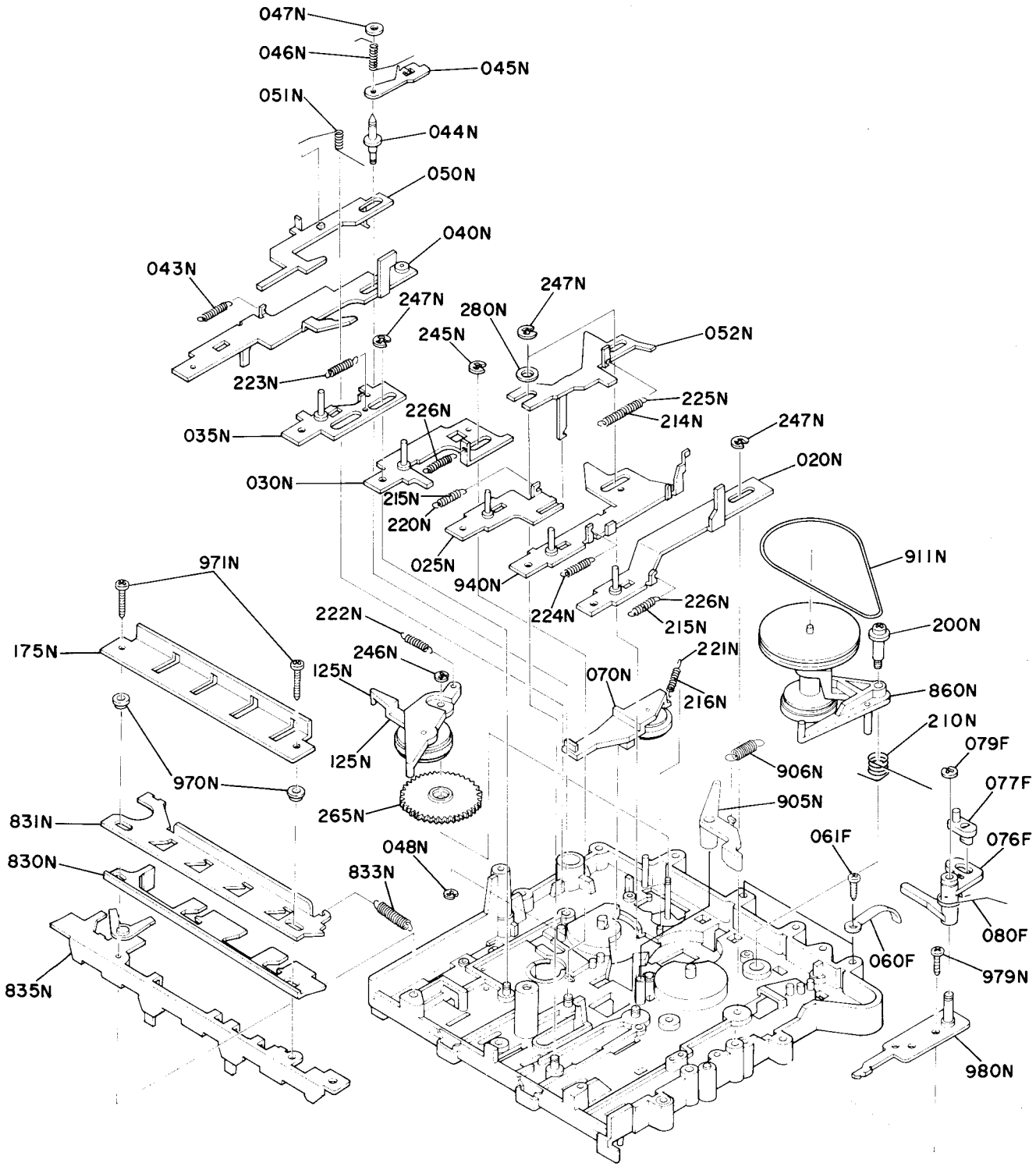


• (U) for U.S.A.
• (C) for Canada
• (N) for Europe

REF. DESIG.	Q'TY U	C	N	PART NO.	DESCRIPTION	
051F	1	1	1	4225052010	Counter	
052F	1	1	1	4223160040	Bracket	
053F	2	2	2	51100305A9	B.H.M. Screw	B3 x 5
054F	2	2	2	51060305A9	P.H.M. Screw	P3 x 5
056F	1	1	1	4223262010	Pulley	
057F	1	1	1	4223264010	Belt	
058F	1	1	1	4223264020	Belt	
065F	1	1	1	64000300R0	RG Ring, E Type	
082F	1	1	1	51382608P0	P.H. TAP. Screw	P2.6 x 8
205N	1	1	1	51382608P0	P.H. TAP. Screw	P2.6 x 8
402N	1	1	1	4367002090	Arm, Cue REW	
403N	1	1	1	4367354150	Lever	
404N	1	1	1	4367115320	Spring	
405N	1	1	1	4367056050	Buffer	

REF. DESIG.	Q'TY U	C	N	PART NO.	DESCRIPTION	
809N	1	1	1	4382262012	Pulley	
819N	1	1	1	51610203A0	Set Screw, F.P.	
845N	1	1	1	4384258010	Hook	
846N	1	1	1	4384160010	Bracket	
847N	1	1	1	4384002010	Arm	
848N	2	2	2	4384055020	Collar	
849N	1	1	1	4384115010	Spring	
850N	2	2	2	51382608P0	P.H. TAP. Screw	P2.6 x 8
851N	2	2	2	51060205A0	P.H.M. Screw	P2 x 5
920N	1	1	1	4382160700	Bracket	
924N	3	3	3	51300308B0	P.H. TAP. Screw	P3 x 8
925N	3	3	3	4383259010	Bushing	
926N	3	3	3	4367112150	Shaft	
927N	1	1	1	4382115080	Spring	
928N	2	2	2	51062605A0	P.H.M. Screw	P2.6 x 5
929N	1	1	1	62261240W0	Lug	
930N	1	1	1	54010300E0	Flat Washer, S	
950N	1	1	1	4382160730	Blacket	
955N	3	3	3	51300308B0	P.H. TAP. Screw	P3 x 8
C001	1	1	1	EA22701090	Elect Cap.	220μF 10V
M001	1	1	1	MM10600370	D.C. Motor	6V 2200 rpm
S001	1	1	1	SM01010680	Mini Switch, Motor	
S004	1	1	1	SM01010512	Mini Switch, Rec/Play AMP.	

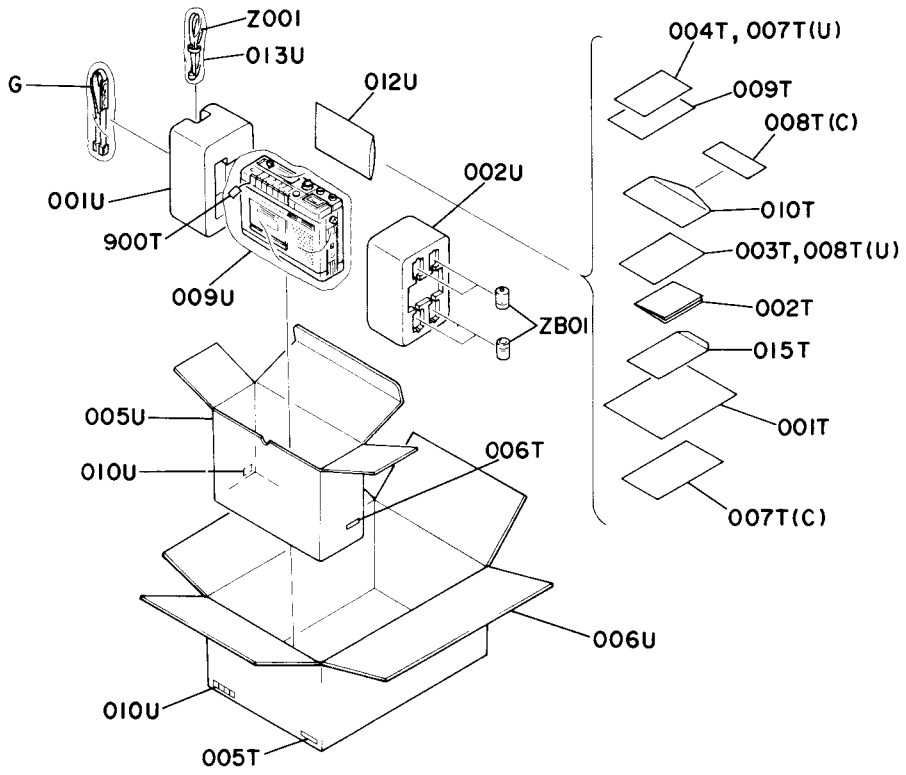
• [P05-99] Parts Assembled on the Reverse of the Chassis



REF. DESIG.	Q'TY U	C	N	PART NO.	DESCRIPTION
020N	1	1	1	4382354702	Lever, Rec.
025N	1	1	1	4380354723	Lever, Play
030N	1	1	1	4380354734	Lever, FF/CUE
035N	1	1	1	4380354743	Lever, Stop
040N	1	1	1	4380354754	Lever, Pause
043N	1	1	1	4367115210	Spring
044N	1	1	1	4367112134	Shaft
045N	1	1	1	4367054032	Cam
046N	1	1	1	4382115060	Spring
047N	1	1	1	59020805G9	Washer
048N	1	1	1	64001500R0	RG Ring, E Type
050N	1	1	1	4367354070	Lever, Eject
051N	1	1	1	4380115080	Spring
052N	1	1	1	4367354060	Lever
070N	1	1	1	4367354760	Lever, FF Idler
125N	1	1	1	4382002713	Arm
175N	1	1	1	4367051040	Guide
200N	1	1	1	4367112180	Shaft
210N	1	1	1	4382115052	Spring
214N	1	1	1	4367056040	Buffer
215N	2	2	2	4367056050	Buffer
216N	1	1	1	4367056030	Buffer
220N	1	1	1	4367115240	Spring
221N	1	1	1	4367115090	Spring
222N	1	1	1	4367115120	Spring
223N	1	1	1	4367115250	Spring
224N	1	1	1	4367115340	Spring
225N	1	1	1	4367115270	Spring
226N	2	2	2	4367115280	Spring
245N	1	1	1	64002500R0	RG Ring, E Type

REF. DESIG.	Q'TY U	C	N	PART NO.	DESCRIPTION
246N	1	1	1	64001500R0	RG Ring, E Type
247N	4	4	4	64000300R0	RG Ring, E Type
265N	1	1	1	4367058010	Gear
280N	1	1	1	59046501G9	Washer
830N	1	1	1	4367054010	Cam
831N	1	1	1	4367054020	Cam
833N	1	1	1	4367115280	Spring
835N	1	1	1	4367051700	Guide
860N	1	1	1	4382001700	Idler
905N	1	1	1	4367002080	Arm
906N	1	1	1	4367115150	Spring
911N	1	1	1	4382264020	Belt
940N	1	1	1	4380354704	Lever, REW
970N	2	2	2	4367055023	Collar
971N	2	2	2	51280314B0	B.H. TAP. Screw B3 x 14
979N	1	1	1	51300308B0	P.H. TAP. Screw P3 x 8
980N	1	1	1	4382160742	Bracket
060F	2	2	2	1210005010	Clamper
061F	2	2	2	51280308B0	B.H. TAP. Screw B3 x 8
076F	1	1	1	4223354012	Lever
077F	1	1	1	4223354020	Lever
079F	1	1	1	64000300R0	RG Ring, E Type
080F	1	1	1	4223115023	Spring

• [H01-99] Packing Materials



• (U) for U.S.A.
• (C) for Canada
• (N) for Europe

REF. DESIG.	Q'TY U	C	N	PART NO.	DESCRIPTION
001T	1			4224851010	Instructions
001T		1	1	4223851310	Instructions
002T		1		9650000050	S. Station Card
003T		1		3917854013	Guarantee Card
004T		1		3917851020	Instructions
005T	4		4	9510911040	Label
005T		4		9510911050	Label
006T		2		9510901040	Label
007T	1			2876851030	Instructions
007T		1		3369851320	Instructions
008T	1			3906854020	Guarantee Card
008T		1		9630000153	Guarantee Card
009T	1			9630000170	Guarantee Card
010T		1		2918813010	Envelope
015T	1			4183813010	Envelope
900T	1		1	9560000090	Hang Tag

REF. DESIG.	Q'TY U	C	N	PART NO.	DESCRIPTION
001U	1	1	1	4223809010	Cushion
002U	1	1	1	4223809020	Cushion
005U	1		1	4224801010	Packing Case
005U		1		4224801020	Packing Case
006U	1	1	1	4224805010	Master Carton
009U	1	1	1	9012840010	Polyethy Bag
010U	2	2	2	9526019010	Serial No Card
012U	1	1	1	9011525010	Polyethy Bag
013U	1	1	1	9011020010	Polyethy Bag
Z001			1	ZC01805010	A.C. Power Coad
Z001	1	1		ZC02002040	A.C. Power Coad
ZB01	4	4		ZB01010070	Battery, UM-1

11. ELECTRICAL PARTS LIST

- (U) for U.S.A.
- (C) for Canada
- (N) for Europe

REF. DESIG.	Q'TY U	C	N	PART NO.	DESCRIPTION
					P100-REC/PLAY CIRCUIT BOARD
P100	1	1	1	YK42241510	P.W. Board, Rec/Play
	1	1	1	ZZ42241510	P.W. Board Assembly
					P100-CAPACITORS
C101	1	1	1	EA10701090	Elect 100μF 10V
C102	1	1	1	EA10601690	Elect 10μF 16V
C103	1	1	1	DD15470370	Ceramic 47pF ±5%
C104	1	1	1	EA47503590	Elect 4.7μF 35V
C105	1	1	1	EA10701090	Elect 100μF 10V
C106	1	1	1	DF15223300	Film 0.022μF ±5%
C107	1	1	1	EA10601690	Elect 10μF 16V
C108	1	1	1	EA22701090	Elect 220μF 10V
C109	1	1	1	DF16102300	Film 0.001μF ±10%
C110	1	1	1	EA10601690	Elect 10μF 16V
C111	1	1	1	EA47700690	Elect 470μF 6V
C112	1	1	1	EA33601090	Elect 33μF 10V
C113	1	1	1	DF16222300	Film 0.0022μF ±10%
C114	1	1	1	DD15471370	Ceramic 470pF ±5%
C115	1	1	1	EA47701090	Elect 470μF 10V
C116	1	1	1	EA10801090	Elect 1000μF 10V
C117	1	1	1	EA10505090	Elect 1μF
C118	1	1	1	EA47503590	Elect 4.7μF 35V
C119	1	1	1	EA10601690	Elect 10μF 16V
C120	1	1	1	EA47503590	Elect 4.7μF 35V
C121	1	1	1	EA33505090	Elect 3.3μF
C122	1	1	1	DF55151510	Film 150pF ±5%
C123	1	1	1	DF16152300	Film 0.0015μF ±10%
C124	1	1	1	EA22801090	Elect 2200μF 10V
C125	1	1	1	DF16332300	Film 0.0033μF ±10%
C126	1	1	1	DF16153300	Film 0.015μF ±10%
C127	1	1	1	DF16153300	Film 0.015μF ±10%
C128	1	1	1	EZ22701010	Elect 220μF 10V
C129	1	1	1	DF16103520	Film 0.01μF ±10%
C130	1	1	1	DF55271510	Film 270pF ±5%
C131	1	1	1	DF16473300	Film 0.047μF ±10%
C132	1	1	1	EA33701090	Elect 330μF 10V
C133	1	1	1	EA33505090	Elect 3.3μF
C134	1	1	1	EA10601690	Elect 10μF 16V
C135	1	1	1	DF16102300	Film 0.001μF ±10%
C136	1	1	1	EA33505090	Elect 3.3μF
C137	1	1	1	DF16822300	Film 0.0082μF ±10%
C138	1	1	1	DF16102300	Film 0.001μF ±10%
C139	1	1	1	DF16822300	Film 0.0082μF ±10%
C140	1	1	1	EA10801090	Elect 1000μF 10V
C141	1	1	1	DF15182300	Film 0.0018μF ±5%
C142	1	1	1	EA10505090	Elect 1μF
C143	1	1	1	DD15101370	Ceramic 100pF ±5%
C144	1	1	1	DD15470370	Ceramic 47pF ±5%
C145	1	1	1	EA10505090	Elect 1μF
C146	1	1	1	DF16123300	Film 0.012μF ±10%
C147	1	1	1	DF16332300	Film 0.0033μF ±10%
C148	1	1	1	EA10505090	Elect 1μF
C149	1	1	1	DD15331370	Ceramic 330pF ±5%
C150	1	1	1	DF16272300	Film 0.0027μF ±10%
C151	1	1	1	DD15471370	Ceramic 470pF ±5%
C152	1	1	1	DD15471370	Ceramic 470pF ±5%

REF. DESIG.	Q'TY U	C	N	PART NO.	DESCRIPTION
					P100-RESISTORS (All Resistors are ±5% and ¼W)
R101	1	1	1	GD05103140	10KΩ
R102	1	1	1	GD05273140	27KΩ
R103	1	1	1	GD05222140	2.2KΩ
R104	1	1	1	GD05102140	1KΩ
R105	1	1	1	GD05683140	68KΩ
R106	1	1	1	GD05273140	27KΩ
R107	1	1	1	GD05104140	100KΩ
R108	1	1	1	RA03020030	Trimming, 3KΩ (B) Play EQ Adj.
R109	1	1	1	GD05682140	6.8KΩ
R110	1	1	1	GD05102140	1KΩ
R111	1	1	1	GD05104140	100KΩ
R112	1	1	1	RK02030480	Variable, 20KΩ (A) Rec Volume
R113	1	1	1	GD05152140	1.5KΩ
R114	1	1	1	RA02030110	Trimming, 20KΩ(B)Play Level Adj.
R115	1	1	1	GD05392140	3.9KΩ
R116	1	1	1	GD05752140	7.5KΩ
R117	1	1	1	GF05470140	47Ω
R118	1	1	1	GF05470140	47Ω
R119	1	1	1	GD05122140	1.2KΩ
R120	1	1	1	GD05303140	30KΩ
R121	1	1	1	RA01030260	Trimming, 10KΩ (B) Batt. Adj.
R122	1	1	1	GD05472140	4.7KΩ
R123	1	1	1	GD05473140	47KΩ
R124	1	1	1	GD05105140	1MΩ
R125	1	1	1	GD05105140	1MΩ
R126	1	1	1	GD05332140	3.3KΩ
R127	1	1	1	GD05183140	18KΩ
R128	1	1	1	GD05242140	2.4KΩ
R129	1	1	1	GD05362140	3.6KΩ
R130	1	1	1	RK05020250	Variable, 5KΩ (B) Vari Speed
R131	1	1	1	GJ05330010	33Ω 1W
R132	1	1	1	GD05822140	8.2KΩ
R133	1	1	1	GF05100140	10Ω
R134	1	1	1	RA05030220	Trimming, 50KΩ (B) Bias Adj.
R135	1	1	1	GD05272140	2.7KΩ
R136	1	1	1	GD05332140	3.3KΩ
R137	1	1	1	RD01030050	Variable, 10KΩ (A) P.B. Volume
R138	1	1	1	RD01030050	Variable, 20KΩ (A) Tone
R139	1	1	1	GD05122140	1.5KΩ
R140	1	1	1	GK05472010	0.47Ω 1W
R141	1	1	1	GD05331140	330Ω
R142	1	1	1	GD05150140	15Ω
R143	1	1	1	GD05332140	3.3KΩ
R144	1	1	1	GD05151140	150Ω
R145	1	1	1	GD05100140	10Ω
R146	1	1	1	GF05101140	100Ω
R147	1	1	1	GD05105140	1MΩ
R149	1	1	1	GD05472140	4.7KΩ
R150	1	1	1	GF05039140	3.9Ω
R151	1	1	1	GD05153140	15KΩ
R152	1	1	1	GD05473140	47KΩ
R153	1	1	1	GD05022140	2.2Ω

- (U) for U.S.A.
- (C) for Canada
- (N) for Europe

REF. DESIG.	Q'TY U	C	N	PART NO.	DESCRIPTION
					P100-SEMICONDUCTORS
Q101	1	1	1	HC10008210	IC BA313
Q102	1	1	1	HC10006210	IC BA306
Q103	1	1	1	HC10038050	IC TA7211P
Q104	1	1	1	HT404711L0	Transistor 2SD471L
Q105	1	1	1	HD20009030	Diode 2SD-132A
Q106	1	1	1	HD20007030	Diode 2SD-131A
Q107	1	1	1	HD20023100	Diode 10E1
Q108	1	1	1	HD10001010	Diode 1N34A
Q109	1	1	1	HD10001010	Diode 1N34A
Q110	1	1	1	HD10001010	Diode 1N34A
Q111	1	1	1	HD20023100	Diode 10E1
Q112	1	1	1	HD20011050	Diode 1S1555
Q113	1	1	1	HD20011050	Diode 1S1555
					P100-MISCELLANEOUS
F101			1	FS10063800	Fuse 250V 630mAT
J101	1	1	1	YU10070010	Connective Cord 10P-70mm
J102	1	1	1	YU04200010	Connective Cord 4P-200mm
J103	1	1	1	YU04070010	Connective Cord 4P-70mm
J105	1	1	1	YJ06001060	Jack 7P
J106	1	1	1	YP06001060	Plug 7P
J107	1	1	1	YP10002110	Plug 3P
J108	1	1	1	YB00350010	Connective Cord 3P
J123			1	YJ08000200	Jack, Fuse
J124			1	YJ08000200	Jack, Fuse
L101	1	1	1	LC22260500	Choke Coil 22mH
L102	1	1	1	LC24730010	Choke Coil 47mH
S101	1	1	1	SS09020100	Slide Switch Muting Rec/Play
S102	1	1	1	SC04030050	Switch Rec. Selector
T101	1	1	1	TO12406070	Transformer, Line
T102	1	1	1	TC10190040	Transformer, OSC
T103	1	1	1	TO12808080	Transformer, Output
					P200-JACK CIRCUIT BOARD
P200	1	1	1	YK42241520	P.W. Board, Jack
	1	1		ZZ42241520	P.W. Board Assembly
			1	ZZ42248520	P.W. Board Assembly
C201	1	1	1	DD15471370	Ceramic Cap. 470pF ±5%
					P200-RESISTORS
					(All Resistors are ±5% and ¼W)
R201	1	1	1	GD05562140	5.6KΩ
R202	1	1	1	GD05392140	3.9KΩ
R203	1	1	1	GD05154140	150KΩ
R204	1	1	1	GD05471140	470Ω
R205			1	GD05473140	47KΩ
R206			1	GD05473140	47KΩ
R207			1	GD05392140	3.9KΩ
J201	1	1		BY01050130	Jack Board
J201			1	BY01060030	Jack Board

REF. DESIG.	Q'TY U	C	N	PART NO.	DESCRIPTION
					P300-HEADPHONE CIRCUIT BOARD
P300	1	1	1	YK42241530	P.W. Board, Headphone
	1	1	1	ZZ42241530	P.W. Board Assembly
R301	1	1	1	GD05121140	Resistor 120Ω ±5% ¼W
R302	1	1	1	GD05121140	Resistor 120Ω ±5% ¼W
J301	1	1	1	YJ01001120	Jack, Headphone
					P400-POWER CIRCUIT BOARD
P400			1	YK42241540	P.W. Board, Power
			1	ZZ42248540	P.W. Board Assembly
J401 ~ J408			8	YP10001530	Plug
					P500-BATT. CHECK CIRCUIT BOARD
P500	1	1		YK42241550	P.W. Board, Batt. Check
	1	1		ZZ42241550	P.W. Board Assembly
F501	1	1		FS20250910	Fuse 250V 25A

(W01-99)	Assembly and Wiring
(T01-99)	Adjustment
(X01-00)	Correction